

**EVALUATION OF REHABILITATION WORK OF
UTTARKASHI EARTHQUAKE**

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**NATURAL DISASTER MANAGEMENT DIVISION
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PREFACE

This study was conducted by the Giri Institute, Lucknow on behalf of the Department of Agriculture and Co-operation, Ministry of Agriculture, New Delhi. It may be recalled that a very severe earthquake had rocked the Garhwal region of Uttar Pradesh on October 20, 1991 and had unfolded its fury on a very wide scale by taking a heavy toll of human as well as animal lives. The worst affected of the districts was Uttarkashi. Since the loss of property was extensive, the Government undertook various measures in order to rehabilitate the earthquake victims. The task of rehabilitation was Herculean one since the effects of the quake were widespread. In many areas roads were badly damaged and since they were the only means of transportation in the area, hundreds of villages were cut off from the national stream. Moreover, carrying out relief operations on a large scale also involve problems related to finance, availability of manpower and the efficient management of the various programmes. Consequently, a section of the affected population generally remains dissatisfied with the governmental effort and Uttarkashi too was no exception. It is with this in mind that the Giri Institute took up the task of evaluating the rehabilitation work which the government and N.G.O's carried out. For the purpose of the study we selected Uttarkashi district and further narrowed down our focus on the detailed survey of 5 out of the worst affected villages of the district. The findings of our study are being presented in the report.

During the course of the study we received help and co-operation from different departments and this alone made the study possible. We, therefore, wish to record our gratitude to them. First of all we wish to thank the Natural Disaster Management Division of the Department Agriculture and Co-operation within the Ministry of Agriculture, New Delhi, for providing us sufficient funds to meet the cost of the study. Their office also provided some secondary information as well. Secondary information was also made available to us by the office of the Relief Commissioner, Uttar Pradesh Government, Lucknow, Office of the D.M. and A.D.M 'Relief' Uttarkashi and the Tehsil office Bhatwari. We wish to thank them all for the co-

operation extended to us. Some secondary information was provided by CAPART which co-ordinated the work of the NGO's in rehabilitation programmes and our thanks are extended to them as well.

Finally, the report could be completed as a result of the team effort displayed by all those associated with the study. The field survey as well as coding and tabulation of primary and secondary data was very well handled by Shri B.S. Koranga, Shri S.K. Trivedi and Shri K.S. Deoli while Mr. Devanand displayed his quiet efficiency in the typing of the draft and final report. The task of data collection became rather difficult in the wake of the agitation in the hill districts which brought all work to a standstill for months. Our team, therefore, deserves special mention for their efforts.

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CHAPTER I

THE UTTARKASHI EARTHQUAKE: AN OVERVIEW

THE DISTRICT OF UTTARKASHI lies in the north-west corner of Uttar Pradesh in Garhwal region in the upper Himalayas. The district was created in 1960 and, according to the Census of 1991, had an area of 8016 sq. kms and a total population of 2.40 lakh persons. The district by and large has a mountainous terrain consisting of high ridges, hills and plateaus. The land has low fertility. Forest generally occur on the upper ridges that bound the valleys. On the sloping hill sides lie a chain of sparsely populated settlements interspersed with terraced cultivation. Uttarkashi gives rise to the Yamuna and the Bhagirathi, which flows on to become the Ganga. The climate of the district varies considerably from tropical to severe cold depending on the altitude of the area and the extent of exposure to the sun. During winters the temperature drops below freezing point at high altitudes and snow falls at altitudes as low as

1200 M., above sea level. The average rainfall is around 130 cms, three-fourth of which falls between June and September.

The bulk of the total area is administered by the Forest Department. Over half this area is covered with vegetation while the remaining is snow-covered on bare rock. Pine, Fir and Spruce, Kharsu, Birch and Juniper forests are also found at different elevations. Alpine pastures are found throughout the district apart from a rich variety of shrubs, grass and herbs that come up during the monsoon season. A large number of medical plants of great commercial value are also found in the forests.

The district comprises four tehsils which are further divided into six blocks and 681 villages. The economy of the area revolves around agriculture. Agriculture, however, is inhibited by factors such as unavailability of cultivable land, short agricultural season, high altitude and low temperature, small size of the holdings and the problem of soil erosion as a result of the steep gradients. The bulk of land holdings are below 0.5 hectares. Agricultural incomes are mainly supplemented through income from animal husbandry. Bovine and sheep population accounts for almost a third each of total livestock. However, the production of milk per milch animal is rather low. Sheep rearing is an important activity. As has already been indicated, forestry plays an important role in the economy of the district. The district has a very poor industrial base. On the whole, therefore, it ranks among the less developed districts of the state.

An earthquake of magnitude 6.6 (TMD) on Richter Scale, body-wave magnitude 6.5 and surface-wave magnitude 7.1 (USGS) rocked Garhwal region for 45 seconds at around 2.55 a.m. on october 20, 1991 leaving behind a trail of mass destruction to human and animal lives as well as to property. The worst affected districts were Uttarkashi and Tehri Garhwal. The districts of Chamoli, Dehra Dun, Paurigarhwal and Naini Tal were also affected to some extent.

Uttarkashi experienced numerous landslides along with the adjoining districts. Landslides, cracks and slumping of roads was noticed all along the route between Gangotri and Gangnani in Bhatwari block of Uttarkashi. Numerous telephonic and electric poles were broken disrupting both communications as well as power suply. Gwana bridge, approximately 8 kms from Uttarkashi on the Uttarkashi - Gangotri road collapsed thereby cutting off hundreds of villages. Consequently it was very difficult for the rescue and relief teams to reach the worst affected areas for several days. Given the approaches to the bridge on Uttarkashi - Lambgaun road were damaged. Mountain slpes in the vicinity of Agora, Sangrali, Jamak and Didsari etc. in the district had cracks and they increased the chances of landslides thereby rendering villages located at the foot of such villages unsafe. Even the fields had wide cracks which made tilling difficult. Even after two weeks of the earthquake landslides accompanied with dust clouds were found occuring making road journey hazardous.

Direction of strong shaking and sound was reported by most people to be from North to South in Uttarkashi district. Some of the unusual observations reported included spotting of fireballs, glowing of the mountains, electric shock and smoke. In Uttarkashi district itself the worst affected areas were Bhatwari, Dunda and Naogaon blocks approachable through three roads viz. Tehri-Uttarkashi road, Uttarkashi-Lambgaon road and Uttarkashi-Balidiyana road.

It is reported that 97 and 63 villages from each of the blocks of Bhatwari and Dunda respectively have been devastated leaving 80-90% houses severely damaged. From Uttarkashi a total of 653 deaths and to 1535 injured persons were officially reported.

The road from Chinyalisaur to Gangotri was blocked at many places especially between Maneri and Bhatwari. Gwana bidge (Ganeshpur) on the Uttarkashi - Gangotri road collapsed and consequently 75 villages were completely cut off from the rest of the country. In Bhatwari block, which had a population of around 32,000, 97 out of the 112 villages suffered severe damage. Most village on the Uttarkashi - Gangotri road (between Ganeshpur and bhatwari) turned into ruins. Fortunately, the Maneri dam did not suffer any damage. However, the walls of the watchman's room and a couple of structures near the entrance of the dam collapsed. While the dam itself was spared the Maneri dam colony suffered severe damage.

Jamak village situated on a hill near the dam suffered total collapse of houses. The quake also took a heavy toll of human life. Here almost all the houses had stone and mud walls with heavy RCC roofs. Cracks on the hill slopes of Jamak were observed as they were parallel to hill slopes and were induced by slope failures. This extensive damage in Jamak and the adjoining villages was due to their nearness to the epicentre of the earthquake.

Didsari, approximately 4 kms from Maneri was among the worst affected villages along with Jamak. The houses here were poor constructions of stone masonry in mud mortar and so almost all the houses collapsed. Another badly affected village was Netala situated on a hill about 8 kms from Uttarkashi on the Uttarkashi-Gangotri road. The road to Netala was breached at several places.

Local people believed the epicentre to be near Agora because of which cracks in the mountains; thick dust clouds appearing like smoke; the surrounding mountains appearing to be on fire; and the observation of moving fireballs. Agora is surrounded by high mountains devoid of vegetation. Falling rocks on dry mountains produced widespread sparks. However, no one either died or was injured at Agora.

Since loss to property as well as of human life was quite extensive, the government took various steps in order to provide relief to the affected people. People were in need of medical help, food as well as proper shelter since

winter was fast approaching. As the damage caused by the earthquake was widespread over a fairly extensive area, the task of rehabilitation was itself a Herculean one. It was made all the more difficult since roads, bridges and communication had been severely damaged as a result of which it became extremely difficult to take up relief work in those villages which had become inaccessible.

While relief started pouring in, there was no organisation, system or guide line. consequently there was a state of chaos and this confusion continued for a couple of weeks. There were heartwarming experiences where people offered their services freely and selflessly for relief work. At the same time there were also experiences where indignity was met by the sufferers of the earthquake. What really happened during the initial phase was that villages and people close to the roadside received more blankets, warm clothes and other relief material as compared to those away from the road. The quake affected villagers camped in the open and suffered till such a time that temporary huts were prepared for them. The district authorities were given funds and materials from relief work. classification was made of the damages suffered by each family, by local revenue officials including Patwaris. These were often done without inspection and consequently there was corruption involved. The list of beneficiaries included those who had hardly suffered damages while some genuine persons were left out. As soon as this irregularity was brought to the knowledge of

the higher authorities, a proper and detailed classification was carried out to assess the damages suffered by the affected population. This time senior and more responsible officers were handed the task of preparing the list of beneficiaries and this was the final list on the basis of which compensation was provided and the relief work was carried out.

On the whole, the task of carrying out relief measures on such a large scale present their own problems both financial and otherwise. As could be expected, a large number of persons were dissatisfied with the arrangements. Many felt that the compensation provided was insufficient as compared to the losses suffered by them while others claimed that corruption was rampant and that relief material as well as money did not reach the needy persons in many cases. It is with these controversies in mind that the Giri Institute of Development Studies, Lucknow undertook a study to evaluate the rehabilitation work which was carried out in Uttarkashi following the earthquake. The basic objectives of the study were as follows:

- (i) to assess the impact of the earthquake on the community - economic and social;
- (ii) to carry out a survey of the rehabilitation and construction efforts;
- (iii) to find out how far the reconstruction programmes have been successful in providing:

- (a) shelter construction;
- (b) medical facilities to the injured and handicapped persons and in tackling the problems of those orphaned; (c) means of livelihood to the affected persons engaged in handicrafts, cottage industries and other professions with low incomes;
- (d) appropriate earthquake resistant technology in the construction of buildings and shelter such that they may be able to stand up to an earthquake in future; and
- (e) to find out the cost effectiveness of the programme and the perception of the people regarding the effectiveness of the programme in putting the survivors back on pre-disaster levels of economic and social well-being.

The study was carried out with the help of both primary and secondary information. Secondary information was collected from the concerned offices at Uttarkashi and from the office of the Relief Commissioner Uttar Pradesh at Lucknow. Some information was also collected from the Department of Agriculture and Cooperation, Natural Disaster Management Division in the Ministry of Agriculture, New Delhi. The Natural Disaster Management Division comes to the assistance of the different states whenever they are faced with natural calamities such as floods, droughts and earth quake etc.

Prior to 1990-91, assessment of damage caused by natural calamities was made through various departments and, accordingly relief was sanctioned. In 1990-91 an assessment was made of the relief provided by the government over the previous five years to individual states and, on the basis of those figures, a share of each state was fixed. This is the total relief that the concerned state is entitled to receive in a financial year. The Central government provides 75 per cent of this relief while the state government is expected to set aside sufficient funds so as to make good the remaining 25 per cent. Generally these relief amounts are disbursed in instalments on a quarterly basis - April, July, October and January. However, in the case of an emergency the instalments are over paid earlier as well. Moreover, whenever the calamity is serious higher amounts, than the actual share of the state in question, can also be provided and the surplus is adjusted against payments over the next couple of years.

In the case of Uttar Pradesh for instance, the government was provided an advance of Rs.55.08 crores during 1992-93 after assessing the extent of the damage caused by the Uttarkashi earthquake. This was in addition to the share of relief of Rs.101.25 crores (Rs.67.50 crores central share and 33.75 crores state's share). The advance paid is now being gradually adjusted at the rate of approximately Rs.3 crores per instalment of relief now being paid to the state government by the Centre.

Yet another source of secondary information was the Council for Advancement of People's Action and Rural Technology (CAPART). CAPART was the Nodel agency which co-ordinated the rehabilitation work carried out by the selected NGO's in Uttarkashi.

It is really unfortunate that the records maintained at the district headquarter or in the office of the Relief Commissioner were not quite upto date. Consequently when we desired to have the latest situation in connection to relief and rehabilitation measures, particularly with respect to the exact situation regarding construction of houses, the required data was not available either at Uttarkashi or in Lucknow. The first visit to Uttarkashi was made during June-July 1994 and we had hoped to make a second visit after the monsoons so as to fill the data gaps in the secondary information. However, the troubled situation in the Uttarkhand area prevented us from obtaining the information even if it exists in the offices of the ADM Uttarkashi. The office of the Relief Commissioner U.P., in Lucknow also could not provide us these details. And since it is from the Relief Commissioner's office that information is ultimately sent to the Natural Disaster Management Division, Department of Agriculture and Co-operation, it is quite natural that information received by them was only in accordance with what had been provided to them. We have had to work within these limitations.

Even at the CAPART we could not obtain the detailed information regarding the NGO's as per our requirements related to the rehabilitation work carried out by them after the earthquake. We therefore worked with a definite drawback since the availability of detailed secondary information would have facilitated our report writing.

For the purpose of obtaining primary data, a field survey was carried out at Uttarkashi. It had been decided to select some of the worst affected villages of the district. Our survey team visited Uttarkashi and compiled information related to destruction caused by the earthquake villagewise in terms of loss of human life and animals, injuries to human being and loss of property in terms of damages to houses. From the list of villages thus compiled we selected five from among the worst affected villages keeping in mind the fact that we select at least one such village which is a remote one. A detailed survey was then carried out in these villages with the help of a structured questionnaire which contained details such as:

- (i) demographic details of the household;
- (ii) details regarding education, occupation and income of the household;
- (iii) the impact of the earthquake from the point of view of the extent of damage caused to both life and property;
- (iv) the type and extent of relief measures which were provided to the affected population;

- (v) *the role played by the government as well as NGO's in providing relief and in rehabilitating the earthquake victims;*
- (vi) *the efficacy of these measures; and*
- (vii) *people's perception regarding relief provided and their suggestions.*

Since Bhatwari was the worst affected Tehsil of Uttarkashi, the selection of villages was carried out from Bhatwari itself. The villages which were selected for the purpose of our detailed survey were Didsari, Jamak, Ganeshpur, Kamar and Netala. These were among the worst affected villages. In order to ensure that the results by way of our findings were meaningful it was decided to have large sized sample by covering over 50 per cent of the households. The ultimate criterion for the sample was to cover over 50 per cent households such that the overall sample size is around 275. Therefore, the total sample size for the study was 282 households. While a detailed survey was carried out in these five villages, we thought that it would be worthwhile to visit another 2-3 villages and survey them on the basis of discussions with various local persons as well as our own observations in order to strengthen the findings of the study. And accordingly we visited the villages namely - Maneri, Bena Luthru and Syaba, where such an observational study was carried out by us.

Before we begin about presenting the details of the Uttarkashi earthquake on the basis of the secondary information collected by us, it would be worthwhile to have a look at some information related to the occurrence of some severe earthquakes in the Himalayan region. The details are being presented in Table 1.1 below.

Table 1.1: Details of the Severe Earthquakes in the Himalayan Region

<u>DATE</u>					
Sep 8,	1803	Garhwal-Kumaun	1:30 AM	300	8.00
Sep 18,	1880	Naini Tal-Bhawan	10:00 AM	151	N.A
May 30,	1885	Kashmir	Night	3000	8.7
June 12,	1897	Assam	4:45 PM	1500	8.1
April 14,	1905	Kangra	Night	20000	8.2
July 3,	1930	Bengal-Assam	Night	No loss of human life	7.0
Jan 15,	1934	Bihar-Nepal	Night	10,000	8.4
Aug. 15,	1950	Assam	Night	400	8.7
Jan. 19,	1975	Kinnaur	1:30 PM	42	6.2
Oct. 20,	1991	Garhwal	2:55 AM	800	6.6

Source: Pahar

It is quite evident from the above table that an earthquake with severe intensity had been felt in Garhwal region as far back as 1803 AD and consequently the people of the area as well as the administrative machinery was

virtually taken by surprise when the earthquake did strike on the night of Oct 20, 1991 and that too with an intensity of 6.6 on the Richter scale. The loss of human life was high since people were sleeping when the tragedy struck. However the lack of preparedness goes to show that there was an element of carelessness on the part of the administration because the eight districts of the hill are most vulnerable to earthquake hazard. Northern part of Almora and Pithoragarh district, the entire once of Chamoli and the eastern part of Paur Garhwal, Tehri Garhwal and Uttarkashi districts all fell under seismic zone V, the zone which is most vulnerable to this hazard. Dehra Dun and the remaining parts of the hill districts mentioned already fall under seismic zone IV. As a result precautions should have been taken regarding the reduction of damage caused due to this hazard.

The extent of the damage caused by the earthquake can be gauged from Table 1.2. As expected, the intensity of the destruction varied inversely with the distance from the epicentre. Consequently, destruction was massive in the district of Uttarkashi. A total of 601 villages were affected and around 650 persons lost their lives while 4710 persons received injuries. The loss of animal life was over 560. Almost 15 thousand houses were damaged to some extent. Tehri Garhwal was the next district as far as the extent of damage is concerned. Fortunately the number of persons to have died was only 63 while another 43 were injured.

Likewise, only 71 animals died. However, over 4700 houses were fully damaged and the number of partly damaged houses was as high as nearly 22 thousand. Chamoli, Dehra Dun and Paurigarhwal also suffered as a result of the earthquake but the damage caused was only marginal as compared to Uttarkashi. Only two persons lost their lives in Chamoli and only 21 persons received injured. In the three districts taken together only 633 houses had been fully damaged and 2874 damaged partly. On the whole, therefore, over 20,000

Table No.1.2 : 1991 Earthquake Disaster Scenario in U.P. Hills

Sl. District No.	Villages Affected	Population Affected (in lakhs)	Fully Damaged Houses	Partly Damaged Houses	Human Loss	Cattle Loss	Injured persons
1. Uttarkashi	601	2.50	14857	19811	653	562	4710
2. Tehri Garhwal	605	1.00	4730	21954	63	71	43
3. Chamoli	699	0.72	573	1973	2	10	18
4. Dehradun	116	0.02	26	452	-	9	-
5. Pauri Garhwal	72	0.01	34	449	-	5	3
6. Nainital	-	-	2	4	-	-	-
Total	2093	4.25	20222	44643	718	657	4774

Source : Department of Revenue and Relief, Government of U.P. April 1994

houses had been fully damaged by the devastation caused by the earthquake and another 44,643 were partly damaged. A total of 715 human beings and 657 animals were killed while over 4700 persons had been left injured.

As has already been indicated the earthquake caused wide spread damage to roads, bridges and communications besides causing havoc to human lives and property. The army took up the challenge of providing relief to the needy persons. They pressed into service eight helicopters with the help of which they distributed relief material in the inaccessible areas and also evacuated the injured persons. The army took upon it the task looking after the 1000 odd pilgrims who were left stranded between Gangotri and Harsil. They also provided medical assistance to the needy persons in Gangotri, Maneri and Uttarkashi. Besides this they provided 5000 tarpaulins and 120 tents for the people adversely affected by the earthquake.

The Director General Boarder Roads took the task of road repair on a virtually war footing. In order to rescue the people caught under the debris they pressed into service five bulldozers. Temporary bridges were built where the regular ones had been destroyed by the earthquake. It was essential to re-establish the road links in order to reach the affected population. Work was done round the clock in many areas and by October 28, 1991 the Rishikesh-Uttarkashi-Harsil links road had been repaired and reopened to all kinds of vehicular

traffic. The land slides had caused difficulties in the repair work on the Bhairoghati - Nelang road but even this had been achieved by the end of October. Even the Indo-Tibbetian Boarder Police played a crucial role in the relief work.

In order to provide immediate relief such that people are protected from the cold relief by way of the tin sheets, tarpoline and tents as well as blankets were provided on a districtwise basis. These details are provided in Table 1.3 below:

Table 1.3 : Districtwise Relief Measures

Sl. District No.	Tin Sheets	Blankets	Tarpoline/Tents
1. Uttarkashi	338,241	102,277	33,123
2. Tehri Garhwal	170,280	25,093	8,792
3. Chamoli	11,576	3,654	620
4. Dehra Dun	776	-	-
Total	520,873	131,024	42,535

Source : Department of Revenue and Relief, Government of U.P., Lucknow

Because of the intensity of the earthquake and its resultant destruction over a widespread area, the first few weeks following the earthquake were those of chaos since

everything was unorganised to begin with. Relief measures kept pouring in but there was no way to organise the distribution of the items being received. In order to have an assessment related to the number of persons dead and injured, of the dead animals as well as of damage to property the Patwaris were asked to prepare a list. In this there were irregularities and so while some fake names found their way in the list of beneficiaries some really genuine ones who left out. This led to resentment among the people and the higher authorities, on gaining knowledge of the same, ordered a fresh survey to be conducted for the purpose of preparing an authentic list of beneficiaries. To do this officers of upto at least the rank of BDO were selected to ensure a fair survey. The result thereby prepared was the final list. All compensation and subsidies were subsequently provided on the basis of this list. Needless to say that there were a few who were not satisfied with even this list and their resentment is seen by way of the numerous cases which were filed in the various courts to challenge the decisions taken by the authorities. One typical problem which arose was that at the time of the survey the person listed was a seriously injured person. Thus the compensation was paid accordingly to him. However, he expired after the compensation had been paid. In all such cases there has been a lot of confusion such cases have not yet been settled. Even upto the time of our field survey many disputed cases were still pending in the different courts right from the district to the High Court level. According to the people the actual number of

dead persons is far more than the official figure if one takes into account the number of persons who died not immediately as a result of the house collapse, but suffered for upto one and a half months before succumbing to their injuries.

Even in the case of those injured, compensation was paid only to those who had received treatment at the district hospital and had evidence to prove the same. Accordingly many genuine persons had to remain content without receiving any compensation for the injuries which were sustained by them.

On the basis of the list of beneficiaries regarding loss of human and animal life, injuries to people and damage to property the government drew up a scheme for the payment of compensation and subsidies to the adversely affected population. Table 1.4 provides the details of the scheme.

Table 1.4 : Government's Scheme of Relief Payment

Sl. Item No.	Amount (Rs.) and details
<u>1. Request Relief</u>	
(a) For each dead person	Rs.30,000/- (with a max. of Rs.90,000/- per family)
(b) For each seriously injured	Rs. 5,000/-
(c) For other injuries	Rs. 2,000/-

Contd...

Table 1.4 contd...

Sl. Item No.	Amount (Rs.) and details
(d) For each dead animal	
(i) Big	Rs. 1,250/- (for a maximum of 2 animals)
(ii) Small	Rs. 300/-
2. <u>Interim Relief</u>	
Per Family	Rs. 3,000/- which included 20 kg of foodgrains, 1 blanket per person upto a maximum of 5 blankets per family, and a cash subsidy of Rs.200/- per unit per family from November 1991 to January 1992.
3. <u>House Subsidy</u>	
(a) For Fully damaged Houses	Rs.20,000/- for general population of this Rs.10,000/- as building material e.g., tin sheets, timber, steel and cement. Rs.10,000/- in cash and Rs.15,000/- as loan from HUDCO In the case of the SC/ST population, however, even the additional Rs.15,000/- was compensation. Therefore, total relief received by them was Rs. 35,000 per person.
(b) Partially damaged houses	Rs.5,000/-

Source: Department of Revenue and Relief, Government of U.P., Lucknow.

Initially it was decided to pay compensation at the rate of Rs.20,000/- per dead person with a maximum limit of Rs.60,000/- per family. However, the amounts were subsequently raised to Rs.30,000/- and Rs.90,000/- respectively. All those who had sustained serious injuries were to receive an amount of Rs.5,000/- whereas the payment made in the case of minor injuries was Rs.2,000/- per person. An amount of Rs.1250 was earmarked as payment to be made to compensate for the loss of a big animal such as a cow while in the case of small animals like goats and sheep the amount fixed was Rs.300/-.

In order to compensate for the damage caused by the earthquake to the houses, the scheme envisaged a payment of Rs.20,000/- as compensation for the houses fully damaged. Half of this amount was to be paid in cash while the balance was to be paid in kind and comprised of items such as 22 tin sheets, 17 bags of cement, 1.45 tonnes of iron and some timber. Over and above this amount, each beneficiary was also to be provided a loan of Rs.15,000/- which had been arranged through HUDCO. In the case of the SC/ST population, however, even this additional Rs.15,000/- was a full subsidy. Thus this category of the beneficiaries received Rs.35,000/- each from the government for the construction of their houses. For houses that had been partially been damaged, compensation paid was Rs.5,000/-.

In order to help the people who had lost everything as a result of the natural calamity, the government issued orders to pay each family Rs.750 per month from November 1991 to January 1992. Even this amount was raised to Rs.3,000/- per family. This included the cost of 20 kgs of food grains, one blanket per person upto a maximum of 5 blankets per family and a cash subsidy of Rs.200/- per unit per family.

In order to ensure proper distribution of relief materials and cash subsidy a number of sectors comprising of 8-10 villages were constituted as distribution points. Similarly zones were carved out consisting of 5-6 sectors under the supervision of an officer not less than the rank of a deputy collector for co-ordination and liason work. Control rooms were set up in Uttarkashi, Chamoli, Tehri Gahrwal and Dehra Dun as well as at Lucknow to supervise and monitor the rescue and relief work.

Since it was not possible to construct the houses quickly and as winter was setting in fast, community centres were constructed. Over 650 such centres were constructed for providing immediate shelter to the affected population. These buildings are now being put to various other public uses.

Table 1.5 : Release of Stocks for Earthquake Relief in Uttarkashi and Garhwal Region of U.P. By Indian Red Cross Society. (Position as on 24.12.1991)

Sl. No.	Items	Quantity
1.	Wollen Blankets (Nos)	14,745
2.	Cotton Blankets (Nos)	1,000
3.	Wollen Garments (Nos)	47,395
4.	Cotton Garments (Nos)	18,800
5.	Quilts (Nos)	15
6.	Milk Powder (Kgs)	3,250
7.	High Protein Biscuits (Kgs)	2,800
8.	Fruit Powder (Kgs)	250
9.	Polythene Sheeting (Rolls)	30
10.	Tarpoline (Nos)	105
11.	Tents	675
12.	Tea (Kgs)	96
13.	Dal (Kgs)	1,535
14.	Sugar (Kgs)	390
15.	Salt (Kgs)	300
16.	Atta (Kgs)	300
17.	Wheat (Kgs)	100
18.	Rice (Kgs)	4,430
19.	Shoes (Pairs)	231
20.	G.I. Sheets (Nos)	20
21.	Assorted Garments (Nos)	21,470
Gross Value		Rs.61,91,000
Cash grants towards provision of G.I. Sheets (Roofing Materials)		Rs.20,00,000
Total value		Rs.81,91,000

The Red Cross Society came to the immediate help of the earthquake victims and the help provided by the society is displayed in Table 1.5. It is quite evident from the table itself that the assistance provided was to the tune of almost Rs.82 lakhs and covered items of daily need of the people.

In order to reconstruct the houses which had been damaged completed by the earthquake an elaborate districtwise scheme was drawn up under loans from HUDCO and the Indira Avas Yojana. The details of the same and the progress achieved upto April 1994 are provided in Table 1.6 below:

Table 1.6 : Districtwise details of House Construction Under HUDCO Loan and Indira Avas (Yojana) Upto April 1994)

Sl. DISTRICT No.	HUDCO		INDIRA AVAS YOJANA	
	Houses constru- cted	Houses under con- struction	Houses constru- cted	Houses under con- struction
1. Uttarkashi	11798	160	2816	26
2. Tehri Garhwal	3479	--	954	--
3. Chamoli	243	--	93	--
4. Total	15520	160	3863	26

Source : Department of Revenue and Relief, Government of U.P., Lucknow.

In order to take up the relief and rehabilitation measures sufficient finances were required. In order to meet its financial needs the state government placed a memorandum for a loan from the world bank. The state government initially prepared a memorandum for Rs.178.12 crores but the same was subsequently revised and the target set was Rs.127.92 crores. The details of the same are being provided below in Table 1.7.

Table 1.7 : Earthquake Reconstruction Project : Original and Revised Estimates Sent to the World Bank

(Rs. in lakhs)			
Sl. No.	Department/Sector	Original	Revised
1.	Roads & Bridges	853.75	600.00
2.	Irrigation, Drainage & Channels	724.08	724.08
3.	Water Supply	427.37	427.37
4.	Electricity	180.00	--
5.	Agriculture	144.00	--
6.	Public Buildings	8934.46	9273.46
7.	Social Infrastructure & Relief	2448.58	--
8.	Roads and Suspension Bridges	4100.00	1768.00
Total		17812.24	12792.91

As against the demands of the state government, the World Bank approved a loan amount of Rs.43.40 crore rupees for the construction of damaged bridges and roads, buildings, irrigation and other projects. It was agreed that the Uttarakhand Development Department would be the Nodel agency at the administrative level while at the field level Commissioner, Garhwal Division would constitute a suitable committee under his chairmanship and this committee would be vested with administrative and financial powers. The headwise break-up of the loan provided was as follows:

Table 1.8 : Departmentwise Details of Amounts Disbursed for Providing Public Ameneties Disrupted by the Earthquake

Sl. No.	Item	Department	Amount (Rs. crores)
1.	Reconstruction of Roads and Bridges and to improve means of communication	P.W.D.	15.20
2.	For the Garwan Bridge	D.G.B.R.	1.00
3.	Irrigation Projects	Irrigation Department	1.70
4.	Drinking Water Projects	Jal Nigam	3.00
5.	Reconstruction and repair of buildings of Education Department	P.W.D.	19.50
6.	Reconstruction and repair of buildings of the Medical Department	P.W.D.	2.70
7.	Project Monitoring	Commissioner Garhwal Division	0.30
Total			43.40

The state government also presented a memorandum before the Central government for a financial assistance of approximately Rs.152 crores as well. Even this was subsequently revised to Rs.124 crores. Table 1.9 provides the required details.

Table 1.9 : Memorandum for Central Assistance by the Government of U.P.
(Rs. in lakhs)

Sl. No.	Department	Original Estimate	Revised Estimate
1.	Animal Husbandry Department	530.00	202.00
2.	Forest Department	1776.50	1507.60
3.	Rural Development Department	5633.93	1436.00
4.	Irrigation Department	233.00	233.00
5.	Higher Education	140.00	140.00
6.	Medical Health	74.92	74.92
7.	Medical Education	56.75	56.75
8.	Panchayat Raj	335.75	335.75
9.	Power	180.00	180.00
10.	Food & civil Supplies	34.50	34.50
11.	Agriculture	6000.00	8000.00
Total		15,171.65	12,387.22

It has already been indicated earlier that the Department of Agriculture and Co-operation, in the Ministry of Agriculture, New Delhi has a Natural Disaster Management Division which comes to the assistance of the various state governments whenever any state government faces a problem on account of a natural calamity. Previously the amounts paid to the state governments were not pre-determined but were decided on the basis of the extent of damage caused. This

invariably led to some time lags between request from the state government and its approval by the Centre.

However, the Ninth Finance commission worked out an average amount to be paid to each state government on the basis of what they had been paid over the previous five years. Of the total relief payable, three-fourths was the phase of the Centre while the balance was to be raised by the respective state government. In the case of Uttar Pradesh the Central share worked out to be Rs.67.50 crores. In the year 1991-92 the Centre provided Uttar Pradesh other amounts as well over and above its share from the Calamity Relief Fund.

- (i) It paid Rs.25 crores as ways and means advance.
- (ii) It paid Rs.6.51 crores from the JRY funds for the three worst affected districts of Garhwal Region.
- (iii) An amount of Rs.5.80 crores was diverted from the Indira Avas Yojana for the reconstruction and repair of the houses which had been damaged by the earthquake.
- (iv) Rupees 2.05 crores were made available from the Prime Minister's Relief Fund.
- (v) The India People's Natural Calamities Thrust provided Rs.8 lakhs for seeds.

(vi) In accordance with the declaration made by the P.M., an amount of Rs.30 crores was provided as assistance from the National Housing Bank for the reconstruction of 20,000 houses badly damaged as a result of the tragedy.

In 1992-93 the government of Uttar Pradesh was provided an additional advance of Rs.55.08 crores after an assessment was made of the damage which had been caused by the earthquake. This was in addition to the Rs.67.50 crores which is the Central share of relief out of the total relief amount of Rs.101.25 crores. The advance then paid is gradually to be adjusted over the next few years at the rate of approximately Rs.3 crores per instalment of relief (quarterly payment) now being paid to the government of Uttar Pradesh.

So far we have talked about the overall situation resulting from the earthquake. However, since the study of ours had its focus in Uttarkashi, we will now look at the scenario from the point of view of this district alone. Uttarkashi district comprises of 4 Tehsils namely Bhatwari, Dunda, Burkote and Puraula. The scenario of Uttarkashi, following the earthquake, is evident from Tale 1.10.

Table 1.10: Tehsilwise Details of the Damage Caused by the Earthquake in Uttarakashi

Sl. No.	Name of Tehsil	Affected population	Lives lost	Fully Damaged Houses	Partly Damaged Houses	Indicative Damaged Houses	Loss of Animals		No. of Injured persons	
							Major	Minor	Major	Minor
1.	Bhatwari	47000	562	8500	1104	75	1152	120	3291	
2.	Dunda	83000	90	5151	9559	550	234	45	1224	
3.	Burkote	40000	1	1008	6846	499	--	4	16	
4.	Puraula	15000	-	198	2302	--	--	-	10	
Total		185000	653	14857	19811	1124	1386	169	4541	

Source : Office of ADM Relief Uttarkashi

It is quite evident from Table 1.10 that Bhatwari Tehsil bore the brunt of the devastation and 86 per cent of lives lost, 83 per cent of the dead animals, 72 per cent of the injured persons and 57 per cent of the fully damaged houses were from this tehsil alone. In order to help the affected population various relief and rehabilitation measures were undertaken. The situation upto 26.9.92 is seen in Table 1.11 and the tehsilwise details regarding the provision of house subsidy under the rehabilitation work is given below in Table 1.12.

Table 1.11 : Description of Earthquake Relief Distribution in Uttarkashi (Upto 26.9.92)

(Rs in lakhs)

Sl. No.	Item	No. of Beneficiaries	Amount
1.	<u>Request Relief</u>		
	(a) Dead Person	614	123.00
	(b) Chief Minister Fund	607	61.00
	(c) Major Injured	147	7.00
	(d) Minor Injured	4540	91.00
	(e) Dead Animal	545	5.00
	Total		287.00
2.	<u>Interim Relief</u>		
	(a) Cash	169608	533.00
	(b) Material	--	676.00
	(c) Indicative Help	864	4.00
	Total		1213.00
3.	<u>House Subsidy Relief</u>		
	(a) Cash	14847	1485.00
	(b) House loan/Indira Awas Subsidy	13817	1313.00
	(c) Material	--	1295.00
	(d) Partly Damaged House	19683	984.00
	Total		5077.00
	Grand Total		6577.00

Source : Office of ADM Relief Uttarkashi

Table 1.12 : Tehsilwise Details of House Subsidy in Uttarkashi

(Rs. in lakhs)

Sl. Tehsil No.	Fully Damaged Houses	Partly Damaged Houses	Total
1. Bhatwari	8,496	1,080	9,576
2. Dunda	5,144	9,540	14,684
3. Barkote	1,008	6,831	7,839
4. Puraula	198	2,203	2,401
Total	14,846	19,654	34,500

Source : Office of ADM Relief, Uttarkashi

As a result of the earthquake extensive damage was caused to the buildings housing various government departments and also to the residential colonies where government employees were residing. Some of the buildings to be damaged were the residence of the D.M. and S.P. police, the State Bank of India, Government Inter college and its hostel, hospital, Court, Post Office and the P.W.D. Inspection bungalow etc. The various departments, therefore, prepared estimates of the loss suffered by them in monetary terms and accordingly placed their demands before the state government. The details of these demands are indicated in Table 1.13. As can be expected, the demands of different departments varied in accordance of the damage caused to the

Table No.1.13 : Departmentwise Assessment of Damaged Residential/Non-Residential Houses and other Assets

(Rs. in lakhs)

Sl. No.	Name of Department	Residential Houses	Non-Residential Houses	Other Infra-structure	Total
1.	Agriculture Dept.	26.25	4.80	2.45	33.50
2.	Horticulture Dept.	10.00	72.00	--	82.00
3.	Fishery Dept.	2.50	2.50	2.00	7.00
4.	Co-operative Department	--	17.90	0.38	18.28
5.	D.R.D.A.	--	5.00	1249.99	1254.99
6.	Zila Parishad	22.00	12.00	80.20	114.20
7.	Private Minor Irrigation	--	0.50	25.46	25.96
8.	Government Irrigation	4.49	--	63.67	68.16
9.	Electric Department	--	37.50	60.00	97.50
10.	Industry	1.00	17.00	--	18.00
11.	Khadi Gramodhyog	--	17.08	0.25	17.33
12.	P.W.D.	126.00	119.00	227.00	472.00
13.	Education Dept. (Primary)	--	425.00	37.80	462.80
14.	Education (Secondary)	--	2055.90	45.96	2101.86
15.	P.R.D.	--	1.50	--	1.50
16.	Health	119.24	223.40	--	342.64
17.	Jal Nigam	5.00	--	28.00	33.00
18.	Panchayati Raj	--	82.50	405.00	487.00
19.	Social Work Dept.	--	6.00	27.90	33.90

Contd...

Table 1.3 contd...

Sl. No.	Name of Department	Residential Houses	Non-Residential Houses	Other Infra-structure	Total
20.	Social Welfare Officer	--	20.00	--	20.00
21.	Jal Sansthan	50.00	--	246.00	296.00
22.	Information Dept.	--	20.00	--	20.00
23.	D.S.O.	10.00	27.69	--	37.69
24.	District Judge	0.50	108.00	0.95	109.45
25.	Nagar Palika	41.65	28.90	33.54	104.09
26.	Chief Animal Husbandry	8.56	6.95	0.85	16.36
27.	A.D.M. (D)	105.12	12.50	--	117.62
28.	R.E.S.	6.25	8.75	--	15.00
29.	Govt. P.G. College	--	21.41	--	21.41
30.	Govt. Politechnique	--	20.00	1.00	21.00
31.	S.P.	73.85	30.32	0.10	104.27
32.	Maneri bhali Nirman Khand	83.40	6.90	14.24	104.54
33.	Garhwal Vikas Mandal Nigam	143.00	--	--	143.00
34.	T.S.O.	--	1.59	--	1.59
35.	Research and Planning	4.83	5.69	5.00	15.52
36.	B.S.A.	--	--	246.00	246.00
37.	Forest	163.00	1700.22	106.02	1969.24
38.	AG and DC	9.50	1.00	--	10.50
39.	Revenue	115.00	115.00	--	230.00
40.	Irrigation	--	--	102.68	102.68
Total		1132.14	5214.52	3012.44	9359.00

Source : Office of ADM Relief, Uttarkashi.

Table No.1.14 : Amount Distributed to Various Department for Earthquake Relief in Uttarkashi
(Rs in lakhs)

Sl. No.	Name of Department	Amount Demanded from Govt.	Amount Distributed	Amount Expended
1.	Garhwal Jal Sansthan	--	50.00	50.40
2.	District Programme Office	--	6119 Bags and 1359 oil packs	6119 Bags and 1359 oil packs
3.	EE Irrigation Division	55.40	32.25	32.25
4.	EE Examination and Control Division	--	4.77	5.10
5.	EE Electric Supply	24.55	10.60	16.75
6.	EE Jal Nigam	18.00	15.00	15.00
7.	Department of Agriculture	--	6.00	6.00
8.	Poteto and vegetable office	--	4.72	4.72
9.	D.S.W. Officer	10.00	0.10	0.10
10.	Chief Animal Husbandry Officer	--	1.25	0.97
11.	P.W.D.	326.20	147.20	147.20
12.	Nagar Palika	--	8.00	2.65
13.	AE Minor Irrigation	--	5.00	5.00
14.	Zila Parishad	110.00	4.00	4.00
15.	D.S.O.	30.26	1.45	1.45
16.	District Horticulture Officer	7.50	7.50	3.75
17.	B.S.A.	--	2.18	0.59
18.	C.M.O.	--	54.80	55.49
Total		581.91	354.82	354.00

Source : Office of the ADM Relief, Uttarkashi.

buildings of respective departments. The overall loss estimated by all the different departments taken together was Rs.93.59 crores.

In order to take up various relief measures as a result of the breakdown in different types of public utilities etc. the state government disbursed money to the concerned departments such that they may carry out these programmes. The total amount demanded by the various departments was around Rs.5.82 crores. As against this the amount disbursed was Rs.3.55 crores. The details of the same are highlighted in Table 1.14.

In order to reconstruct the houses completely damaged in the earthquake, an elaborate programme was chalked out on a blockwise basis. Out of the 14802 total houses that were to be constructed, the bulk of them were to be constructed with the help of loaning by HUDCO while the remaining were to be taken up under the Indira Avas Yojana. The details of their financing is given below.

Table 1.15: Amount Received from Indira Avas Yojana and HUDCO Awas for House Construction in Uttarkashi

(Rs. in lakhs)

Sl. No.	Name of Project	Amount received	Amount distributed	Balance amount	Addit- ional demand from govt.	Eligi- ble House- hold	No. of houses const- ructed
<u>1. Indira Avas</u>							
(a)	Under J.R.Y.	522.16	411.95	140.21	--	2841	2782
(b)	Natural Dis- aster Fund	19.04	14.20	4.84	--		
					--		
	Total	571.20	426.15	145.05			
<u>2. HUDCO Loan</u>							
		1633.55	1633.55	--	160.29	11959	11437
	TOTAL	2204.75	2059.70	145.05	160.29	14800	14219

It is quite evident from the above table that a total of Rs.22.05 crores was received for house construction. Of this nearly three-fourths was the contribution of HUDCO as they had to construct around from-fifth of the total houses to be constructed. The state government placed an additional demand for Rs.160.29 lakhs to HUDCO. Out of the total of 14,800 houses to be constructed, the total houses which had been constructed were 14,219. Unfortunately, we were unable to find out the period of time which this table covers. Table 1.16, 1.17 and 1.18 give the state of the houses as on

25.9.1992 by showing the extent of construction for the case of total houses as well as individually for houses taken up for construction under the Indira Avas Yojana and the HUDCO loan on a blockwise basis. Here too, our efforts to get up to date information regarding the state of houses were not successful. However, the persons working in the relief office at Uttarkashi informed that all the houses have been constructed.

On the whole the state government spent a total of Rs.103.54 crores on the different relief and rehabilitation measures in Uttarkashi. The details are listed below:

(1)	House Subsidy	Rs.59.70 crores
(2)	G.R.	Rs.17.83 crores
(3)	Ex-Gratia	Rs. 3.09 crores
		<hr/>
		Rs.80.62 crores
(4)	For reconstruction and restoration of public property and services	Rs.22.92 crores
		<hr/>
	Total	Rs.103.54 crores
		<hr/>

This in brief is the picture of the area after the earthquake, with special focus on Uttarkashi, and the types of efforts which were taken up at the government level in order to mitigate the hardships faced by the people of the area. In the next chapter we will focus our attention on the profiles of the villages selected by us for the field survey.

Table 1.16 : Blockwise physical construction progress of Total Earthquake Damaged Houses (Upto 25-9-92)

Sl. No.	Name of Block	Total Eligible House-hold	No. of completed Houses	No. of Houses constructed upto roof level	No. of houses const- ructed upto lintal level	No. of houses const- ructed upto surface level	Houses not const- ructed upto sur- face level
1.	Bhatwari	8492	1964	1395	1508	2590	1114
2.	Dunda	4391	2635	360	539	435	422
3.	Chinyali	786	175	212	130	138	131
4.	Naugaon	935	366	96	150	150	173
5.	Puraula	185	128	33	11	08	05
6.	Mori	13	11	01	--	--	01
Total		14802	5280	2097	2338	3241	1846

Source : Office of ADM Relief, Uttarkashi

Table 1.17: Blockwise Physical Progress of House Construction Under Indira Awas Yojana (Upto 25.9.92)

Sl. No.	Name of Block	Total Eligible House-hold	No. of completed Houses	No. of Houses constructed upto roof level	No. of houses const- ructed upto lintal level	No. of houses const- ructed upto surface level	Houses not const- ructed upto sur- face level
1.	Bhatwari	1340	510	187	208	302	133
2.	Dunda	955	780	58	37	28	52
3.	Chinyali	163	35	30	22	47	29
4.	Naugaon	300	129	58	40	60	13
5.	Paraula	92	61	90	06	04	02
6.	Mori	05	05	--	--	--	--
Total		2855	1520	352	313	441	229

Source : Office of ADM Relief, Uttarkashi

Table 1.18 : Block-wise Physical Progress of House Construction Under HUDCO Loan (Upto 25.9.1992)

Sl. No.	Name of Block	Total Eligible House-hold	No. of completed Houses	No. of Houses constructed upto roof level	No. of houses const- ructed upto lintal level	No. of houses const- ructed upto surface level	Houses not const- ructed upto sur- face level
1.	Bhatwari	7152	1455	1208	1300	2208	981
2.	Dunda	3436	1855	302	502	407	370
3.	Chinyali	623	140	182	108	91	102
4.	Naugaon	635	237	38	110	90	160
5.	Puraula	93	67	14	05	04	03
6.	Mori	08	06	01	--	--	01
Total		11947	3760	1745	2025	2800	1617

Source : Office of the ADM Relief, Uttarkashi.

CHAPTER II

A BRIEF PROFILE OF BHATWARI AND THE SELECTED VILLAGES

We had indicated in the previous chapter itself that among the four tehsils of the district, Bhatwari was the worst affected in terms of havoc caused by the earthquake. It might be recalled that Bhatwari alone accounted for 86 per cent of the total deaths which took place in the district following the earthquake. Likewise, the number of animals to have died was also 83 per cent in the tehsil to the total loss of animals in the district as a whole. The intensity of the damage in Bhatwari can also be gauged from the fact that out of the total number of houses which were fully damaged, 57 per cent were in this tehsil. It was for this reason that we opted for Bhatwari block as the focus of our study since within the tehsil too, Bhatwari block had suffered maximum losses.

Bhatwari is the second largest block and has an area of 249 sq. kms. The total population according to the 1991 census was 42,078 out of which 22,739 were males. The literacy rate among the males was reasonably good at 69.12 per cent. However it was rather low among females (27.12 per cent) and this brought down the overall literacy rates to below 50 per cent. The total workforce of the district was 19143 (main workers) and two-thirds of them were engaged in agriculture (Table 2.1). The fact that the district has a very poor industrial base is evident from the fact that merely 200 persons were engaged in any form of manufacturing activity. In fact, the only other occupational group having

Table 2.1 : Distribution of Mainworkers by Occupational Classification in Bhatwari Block.

Cultivators	12881
Agricultural Labour	246
Animal Husbandry & Forestry	717
Household Industry	37
Industry other than household	163
Mining	695
Transport & Communication	139
Trade & Commerce	439
Other	3720
Total	19143

Source : Statistical Bulletin of Uttarkashi District, 1992

a sizeable number of main workers was the 'other worker' category and accounted for 19.43 per cent of the total main workers.

When there is such a heavy dependence on agriculture, it would be worthwhile looking at the landuse pattern, distribution of land holdings by size of land holdings, and the main crops cultivated along with their yield rates. These are indicated in the Table 2.2, Table 2.3 and Table 2.4.

Table 2.2 : Land Use Pattern of Bhatwari Block

	(Area in Ha.)	
	BLOCK/DISTRICT	
	Bhatwari Block	Uttarkashi District
Total Reporting Area	19008	801619
Forests	1415	710278
Culturable Waste	3386	9194
Current Fallows	12	44
Other Fallows	1042	3914
Land not fit for cultivation	1999	20313
Land Put to Non-Agricultural Use	1076	6973
Pasture	4068	14080
Horticulture	1818	7716
Net Area Sown	4192	29057
Area Sown More Than Once	2345	16158

Source : Statistical Bulletin of Uttarkashi District, 1992

Table 2.3 : Sizewise Distribution of Land Holdings in Bhatwari Block and Uttarkashi District

BLOCK/DISTT:	Below 1 Hect.	1-2 Hect.	2-3 Hect.	3-5 Hect.	Over 5 Hect.	Total Holdings	Avg. Size of land Holding (Hect.)
<hr/>							
HATWARI BLOCK:							
Nos :	1745	975	338	177	91	3326	
Area :	717.85	1339.55	993.24	653.44	484.37	4188.45	1.26
<hr/>							
UTTARKASHI DISTT:							
Nos :	16498	6870	3913	1495	370	29146	
Area :	6657.86	10334.80	10145.57	6799.86	2089.86	36027.15	1.24

Source : Statistical Bulletin of Uttarkashi District, 1992.

Table 2.4 : Main Crops and their yield rates of Bhatwari Block (1991)

MAINCROPS		YIELD RATES	MAIN CROPS		YIELD RATES
A.	<u>Foodgrains</u>	(Qts/Hect.)	C.	<u>Oil Seeds</u>	(Qts/Hec.)
	(i) Paddy	14.27		(i) Mustard	9.93
	(ii) Wheat	15.86		(ii) Lahi	9.93
	(iii) Maize	12.95		(iii) Til	1.47
	(iv) Mandua	12.97			
	(v) Barley	14.63			
B.	<u>Pulses</u>		D.	<u>Cash Crops</u>	
	(i) Urd	3.35		(i) Potatoes	190.29
	(ii) Masur	7.97		(ii) Tobacco	48.75
	(iii) Gram	9.25		(iii) Soyabeen	12.91
	(iv) Arhar	6.95			

Source : *Statistical Bulletin of Uttarkashi District, 1992*

It is quite evident from Tables 2.2, 2.3 and 2.4 that deposit the fact that there is such a heavy reliance on agriculture as the primary economic activity, the agricultural situation is rather grim. Only around 22 per cent of the total reporting area is under cultivation and of the net area sown only around 14.5 per cent is being irrigated (Table 2.2). The bulk of the cultivators (ground 52.5 per cent) have a land holding size of below one hectare and between them they have only 17.14 per cent of the total area under cultivation (Table 2.3). The average land holding size is 1.26 hectares. Besides this agriculture has

its own problems in the hill region such as terraced fields, extreme cold during the winter season etc. As a result of these difficulties the yield rates are also quite low in the case of most crops in the hill as such and so the region of Uttarkashi is no exception (Table 2.4).

A part of the low income is compensated through income from animal husbandry. Livestock figures of Bhatwari block were available for the year 1988 and the same are presented in Table 2.5 below.

Table 2.5 : Details of Livestock for Bhatwari Block (1988)

Block/Distt.	Cows over 3 yrs	Buffa- loes over 3 yrs	Total Bovine popu- lation	Sheep	Goats	Others	Total
Bhatwari Block	5066	3846	22205	13633	11512	607	47957
Uttarkashi District	33798	24491	137249	78756	77150	4432	297587

Source : *Statistical Bulletin of Uttarkashi District, 1992.*

It should be borne in mind that the yield of cows and buffaloes is also low in the hills and it is becoming increasingly difficult to have sufficient pastures for their grazing.

On the whole, therefore, the people of Bhatwari block have a tough life since agriculture, which is their mainstay, is hampered by climatic and topographical peculiarities of

the area. The fields are small and terraced, irrigation facilities limited and the scope to extend the facilities is rather limited. People are, therefore engaged in subsistence agriculture. The other avenues of employment are also limited given the fact that the area, in fact the entire district, does not have much to offer in terms of industries - whether large, small or of the household type. We must, therefore, keep all these things in mind while visualising the destruction that was caused by the earthquake on the night of October 21, 1991 and the adversities which the people had to cope up with on account of the loss suffered by them in terms of death of their family members, injuries to them as well as the next of kin, death and injuries to their animals and damage to houses and other property (agricultural land) and all this at a time when winter was round the corner.

Out of a total of 98 revenue villages which fall in Bhatwari Tehsil, 28 of them were badly affected. Of these most of them were in Bhatwari block. Our final selection thus obviously narrowed down to these villages and the villages which were finally selected by us were - Didsari, Ganeshpur, Jamak, Kamar and Nctala. When the study was being initiated, we had also decided to visit a few more villages as well besides those selected for detailed analysis. The rationale behind this was to visit them for observation and to have discussions with people in order to supplement our findings emerging from the detailed survy of the five

villages in which a survey was to be conducted on the basis of a structured questionnaire. The villages we selected for observation were Maneri, Syaba and Baina.

Table 2.6 : Details of Human Deaths, Injuries and the Compensation paid in Different Villages.

Name of Village	Details of Dead Persons			Details of Injuries			
	Nos. of Actual Deaths	Number of persons for whom compensation was paid	Com- pen- sation (Rs. lakhs)	No. Recei- ving Major Inju- ries	No. Recei- ving Minor Inju- ries	To- tal paid (Rs. lakhs)	Com- pen- sation paid (Rs. lakhs)
A. SELECTED VILLAGES							
(a) Didsari	43	36	10.80	3	64	67	1.43
(b) Ganeshpur	47	45	13.50	14	60	74	1.90
(c) Jamak	70	67	20.10	12	57	69	1.74
(d) Kamar	8	8	2.40	4	10	14	0.40
(e) Netala	47	46	13.80	7	64	71	1.63
Total (A)	215	202	60.60	40	255	295	7.10
B. OBSERVATION VILLAGES							
(a) Maneri	34	30	9.00	2	12	14	0.34
(b) Syaba	9	9	2.10	1	27	28	0.59
(c) Baina	8	8	2.40	3	32	35	0.79
Total (B)	51	47	14.10	6	71	77	1.72
Grand Total (A+B)	266	249	74.70	46	326	372	8.12

Source : Office of the ADM Relief, Uttarkashi

Before we draw a brief profile of the selected villages, it will be meaningful to look at the extent of damage caused to them by way of loss of human lives, injuries to individuals, death of animals and damage to houses. This information can be seen at a glance with the help of Table 2.6, 2.7 and 2.8.

Table 2.7 : Details of Animals to have died during the Earthquake in the Selected Villages

	ANIMAL DEATH			
	Big	Small	Total	Compensation paid (Rs.)
A. <u>SELECTED VILLAGES</u>				
(a) Didsari	6	44	50	46700
(b) Ganeshpur	4	1	5	5300
(c) Jamak	32	7	39	42100
(d) Kamar	10	7	17	14750
(e) Netala	7	1	8	9050
Total	59	60	119	127900
B. <u>OBSERVATION VILLAGES</u>				
(a) Maneri	16	3	19	20900
(b) Syaba	15	16	31	20500
(c) Baina	17	8	25	23650
Total	48	27	75	65050
Grant Total (A + B)	107	87	194	192950

Source : Office of the ADM Relief, Uttarkashi

Table 2.8 : Details of Houses damaged by the Earthquake in the Selected Villages

NAME OF VILLAGE	No. of Damaged Houses			Compensation paid in cash (Rs. in lakhs)
	Fully Damaged	Partly Damaged	Total	
A <u>SELECTED VILLAGES</u>				
(a) Didsari	72	1	73	7.25
(b) Ganeshpur	203	-	203	20.30
(c) Jamar	80	-	80	8.00
(d) Kamar	71	-	71	7.10
(e) Netala	232	5	237	23.45
Total (A)	658	6	664	66.10
B. <u>OBSERVATION VILLAGES</u>				
(a) Maneri	119	1	120	11.95
(b) Syaba	75	-	75	7.50
(c) Baina	120	-	120	12.00
Total (B)	314	1	315	31.45
Grand Total (A + B)	972	7	979	97.55

Source : Office of ADM Relief, Uttarkashi

If we compare the figures given in Table 2.7, 2.8 and 2.9 with the corresponding figures given for the district as a whole in the previous chapter, it will be quite evident that out of the total 653 persons to have died in the earthquake, 215 belonged to these five villages. In other words, these five villages jointly accounted for very nearly one-third of the total deaths of human beings as a result of the earthquake. Although the death of animals was of a lower

order as compared to that of human lives, even then these five villages together accounted for very nearly one-tenth of the total deaths of animals (big and small combined). - 119 out of 1386. And looking at the extent at the extent of houses fully damaged, the intensity of destruction can be gauged from the fact that in the five villages selected by us for detailed study only Didsari and Netala were the villages where 1 and 5 houses respectively escaped the wrath of the earthquake from being completely destroyed.

Even when we take a look at the three villages selected in for the purpose of observation, the total number of death were found to be 51 and 75 in the case of human being and animals respectively while 77 human beings were injured to some degree or the other. Here too Maneri was the lone village where just one house was saved from being totally destroyed.

We will now draw a brief profile of these villages. For this not only will be utilise the data already provided in Table 2.6, 2.7 and 2.8 but will also refer to tabales 2.9, 2.10 and 2.11 and 2.12. Table 2.9 has demographic details of each village, Table 2.10 has details about the distribution of main workers while Table 2.11 has details of vairous infrastructure facilities. Table 2.12 has the details pertaining to relief provided after the earthquake.

Table 2.9 : Population Distributions of Selected Villages

Name of Village	Area in Hect.	No. of House hold	Total Population			S.C. Population			S.T. Population			Total Literacy		
			Male	Femal	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
1. Didsari	1981	53	99 (45.21)	120 (54.79)	219 (100.00)	26 (26.26)	30 (25.00)	56 (25.57)	--	--	--	58 (58.59)	7 (5.83)	65 (29.68)
	1991	85.26	58	140 (49.30)	144 (50.70)	284 (100.00)	35 (25.00)	30 (20.83)	65 (22.89)	--	--	--	95 (67.86)	34 (23.61)
2. Ganeshpur	1981	103	323 (55.31)	261 (44.69)	584 (100.00)	60 (18.58)	40 (15.33)	100 (17.13)	2 (0.62)	1 (0.38)	3 (0.51)	193 (59.75)	43 (16.48)	236 (40.41)
	1991	190.78	137	360 (51.43)	340 (48.57)	700 (100.00)	67 (18.61)	60 (17.65)	127 (18.14)	13 (3.61)	14 (4.12)	27 (3.86)	263 (73.06)	116 (34.12)
3. Jamak	1981	261	625 (65.72)	326 (34.28)	951 (100.00)	31 (4.96)	26 (7.98)	57 (5.99)	2 (0.32)	1 (0.31)	3 (0.32)	376 (60.16)	40 (12.27)	416 (43.74)
	1991	117.44	64	164 (47.67)	180 (52.33)	344 (100.00)	27 (16.46)	24 (13.33)	51 (14.83)	--	--	--	91 (55.49)	58 (32.22)
4. Kamar	1981	51	133 (52.75)	127 (48.85)	260 (100.00)	--	--	--	--	--	--	87 (65.41)	2 (1.57)	89 (34.23)
	1991	148.24	55	163 (52.75)	146 (47.25)	309 (100.00)	9 (5.52)	4 (2.74)	13 (4.14)	--	--	--	99 (60.74)	16 (10.95)
5. Netala	1981	129	316 (53.29)	277 (46.71)	593 (100.00)	67 (21.20)	33 (11.91)	90 (15.18)	--	--	--	204 (64.56)	20 (7.22)	224 (37.77)
	1991	163.58	155	439 (49.16)	454 (50.84)	893 (100.00)	95 (21.64)	99 (21.81)	194 (21.72)	8 (1.82)	6 (1.32)	14 (1.57)	314 (71.53)	136 (29.96)

Source : District Census Handbook Uttarkashi, 1981 and for 1991 Data - Block Office, Bhalwari.

Table 2.10 : Distribution of Main Workers in Selected Villages (1991)

NAME OF VILLAGE	WORKERS DISTRIBUTION				Total
	Culti- vation	A.G. labour	Forestry, Services constru- ction and Transport	House hold Indu- stry	
1. Didsari	130 (92.20)	1 (0.71)	10 (7.09)	-	141 (100.00)
2. Ganeshpur	93 (58.13)	7 (4.37)	60 (37.50)	-	160 (100.00)
3. Jamak	154 (94.48)	3 (1.84)	6 (3.68)	-	163 (100.00)
4. Kamar	154 (94.48)	6 (3.68)	3 (1.84)	-	163 (100.00)
5. Nelala	413 (84.11)	-	78 (15.89)	-	491 (100.00)

Source : Block Office, Bhatwari, Uttarkashi

Table 2.11 : Availability of Various Facilities in terms of their Distance from the respective Villages.

PLACE/ FACILITY	NAME OF THE VILLAGE							
	Did- sari	Gane- sh puri	Jamak	Kamar	Netala	Maneri	Syaba	Baina
Bhatwari	13	21	15	24	19	14	12	18
Uttarkashi	17	6	15	24	8	14	21	18
Post Office	3	0	1	8	0	0	6	4
Panchayat								
Bhawan	1	0	1	NIL	NLE	0	NIL	NIL
Community								
Centre	3	3	0	0	0	0	NIL	0
Primary School	0	0	0	0	0	0	0	1
Jr. Basic								
School	0	0	2	8	0	0	4	3
High School/								
Inter	2	6	2	8	0	0	7	5
Degree College	16	6	15	24	8	14	12	18
Pukka Road	1	0	1	8	0	0	4	4
Bus Station	1	0	1	8	1	0	4	4
Hospital	3	6	2	8	8	0	3	5
Veterinary								
Services	13	6	15	24	8	0	6	5
Drinking	NLE	NLE	YES	NLE	NLE	YES	NLE	NLE
Water								
Electricity	NLE	YES	YES	NLE	YES	YES	NLE	NLE
Market	0	0	2	8	0	0	3	5
Fair Price								
Shop	3	2	2	8	0	0	3	3
Co-op.								
Society	3	2	2	8	0	0	6	5

NLE = No longer exists as a result of the earthquake although the facility existed prior to the earthquake.

Source : Based on our Primary Survey.

Table 2.12 : Relief Material Distributed in the Selected Villages

VILLAGE	Tin sheets (Nos)	Cement (Bags)	Iron (Qts)	Blan- kets (Nos)	Tarpa- line (Nos)	Food- grains (Qts)
A. SELECTED VILLAGES						
1. Didsari	1592	1190	102	352	72	8160
2. Ganeshpur	4466	3451	294	332	203	2274
3. Jamak	1760	1360	116	276	79	927
4. Kamar*	2256	--	--	266	70	9960
5. Netala	5124	3757	315	547	231	2469
B. OBSERVATION VILLAGES						
1. Maneri	2626	2023	172.55	1680	120	N.A.
2. Syaba*	2700	--	--	320	72	N.A.
3. Baina	2640	2040	174	488	120	N.A.

Source : Office of A.D.M. Relief, Uttarkashi

* In these two remote villages the villagers refused to take cement and iron since they could not afford the transport cost and also because cement was being distributed during monsoons and people did not have proper place to store the bags.

DIDSARI

Didsari is located 17 kilometers from the district block offices located at Bhatwari. The village has an area of around 85.26 hectares. According to the census of 1981 the total population of Didsari was 219 comprising of 53 households (Table 2.9). The village had a higher number of females as compared to males. The village was extremely backward in terms of literacy with an overall literacy rate of 29.68 per cent. This was primarily so since literacy among females was less than 6 per cent. However, literacy rate among males was relatively higher at 58.59 per cent. Nearly one-fourth of the population comprised of scheduled caste persons. However, there was no one in the village belonging to a scheduled tribe.

By 1991 the population had gone up to 284 and the number of households had also registered a marginal increase from 53 to 58. A striking aspect of this increase of population was the relatively faster increase in the male population by virtue of which the male and female population figures were almost identical - 140 and 144 respectively. Over the decade 1981-91 literacy picked up considerably with female literacy being 23.61 per cent and the overall literacy rates being 45.42 per cent. The village had a total of 141 main workers (Table 2.10). Of these 93 per cent were engaged in agriculture. The rest were engaged in forestry, construction, transport and communication and the service sector.

Looking at the infrastructural facilities of Didsari, it has a primary and junior basic school within the village itself whereas a high school/inter college is located at a distance of 2 kms. The degree college, however, is 16 kms away. The Panchayat Bhawan is within a kilometer from the village and so is the pucca road and the bus station. For post office the people have to travel approximately 3 kilometers, which is also the distance at which the community centre is located. The other facility such as medical facilities, fair price shop and co-operative society are also located at a distance of 3 kms from the village. The main market lies within the village itself.

A total of 43 persons lost their lives but compensation worth Rs.10.80 lakhs was paid for 36 dead persons. This is so since the actual deaths in a couple of households had exceeded three and the government paid compensation per family for a maximum of three dead persons. Over and above the compensation of Rs.30,000 which the government provided to the relatives of those who died, the L.T.C. paid an additional Rs.3,000/- each by way of insurance cover but only for the dead adults.

Besides the dead persons the earthquake also left behind 67 injured persons and to them the total compensation provided totalled Rs.1.43 lakhs (Table 2.6). However, according to the inhabitants of Didsari as many as 138

persons had sustained injuries following the earthquake and the condition of 11 such persons was serious.

Even the animals were not spared by the devastation and the official figure for dead animals, both big and small, is shown as 50. compensation at the rate of Rs.1250 and Rs.300 was provided for the big and small animals respectively. Accordingly a total of Rs.56.70 thousand was distributed to compensate those individuals whose animals had perished (2.7). In this case too the people claim that the figure of dead animals was 73 and not 50 as shown in the official estimates.

In the village 72 out of the 73 houses were fully damaged and the amount of relief paid in cash for the reconstruction of damaged houses was to the tune of Rs.7.25 lakhs. It may be recalled that out of the total compensation of Rs.20,000 for the fully destroyed houses half was paid in cash and the rest in terms of building material. It is interesting to note that according to Census estimates the total number of households in Didsari, during 1991, were 58 (Table 2.9). These irregularities in the listing of beneficiaries were made at the time of listing itself with the connivance of the authorities. What really happened was that although an individual had been living along with his sons, they were shown as separate households while listing of beneficiaries was being carried out. This malpractice was not found in Didsari alone but was seen in all the five of our selected villages and also in a large number of other

villages as well. This discrepancy can be seen when we compare Table 2.8 and Table 2.9. The compensation paid out in kind in the village comprised of 1592 tin sheets, 1190 bags of cement and 103 quintals of building iron (Table 2.12).

Over 80 per cent of the houses prior to the earthquake were made of wood and stone. As a result of the faulty construction there was such widespread damage. In an effort to construct earthquake resistant houses, engineers belong to The Action Research Unit for Development (TARU) provided training to the people of Didsari and provided them knowledge of the model houses which had been developed to make them earthquake resistant. In this connection the people were advised to have a foundation of at least three feet and that it should be built of RCC and building iron. Even above the plinth level the RCC construction should extend for another 3 feet. Walls beyond that upto an additional 6 feet are to be of stone and this is to be followed by another RCC beam. The roofing material should be light such as tin sheets. All the houses which have been constructed in Didsari have been built keeping in mind these specifications. However, till the time of our survey only about half the fully damaged houses had been fully reconstructed. The remaining families were living in semi-constructed shelters. The Director General Border Roads (DGBR) constructed 3 community centres in order to provide immediate shelter to villagers soon after the tragedy.

The main crops cultivated in Didsari are paddy, wheat, Urd and the til. People have voiced their concern over the fact that the productivity, which was already low, has declined still further from an average of around 4 qts per hectare to 2.5 qts per hectare after the earthquake. Cracks had developed in the terraced fields and this has adversely affected agricultural operations. Besides cultivation, people also keep cows and buffaloes and sell the surplus milk in the market to compensate their incomes.

Prior to tragedy the village had both electricity and power supply. However both these facilities broke down and had not been restored till the time our team visited the village for field survey. People are, therefore, forced to fetch water from the rivulets in the surrounding areas and the availability of water has also been adversely affected over the past 3 years.

The Khadi Gramodyog Board has set up a small unit in the vilalge where woollen yarn is made. Around 40-50 persons are engaged in this activity and are paid wages on a per kilogram basis. Woollen sweaters are also knitted with the yarn. However, this is only a secondary activity of the people engaged in spinning etc.

There were 9 persons who claim that they received no compensation whatsoever - either for injuries or for the house construction. People also claimed that there were deaths following injuries to people but their family members

received no compensation for the dead persons. However, the villagers could not provide the exact number of such cases. There are therefore conflicting opinions of the people regarding the extent of losses suffered by them and the official estimates which were the basis for the provision of relief.

GANESHPUR

Among the villages selected by us for detailed survey, Ganeshpur is the largest in terms of area and is spread over 190.78 hectares. It is situated only 6 kilometers from the district headquarter but is relatively far (21 kms) from the tehsil and block headquarter. According to the Census of 1981 its total population was 584 and it consisted of 103 households. As against Didsari Ganeshpur had a higher male population. Once again it is noticed that female literacy rates were rather low at 16.48 per cent while that of the male population was close to 60 per cent. As a result of the low literacy rate among females the overall literacy level dropped down to around 40 per cent. The overall scheduled caste population, although more in absolute terms, was lower in percentage terms in Ganeshpur as compared to Didsari. In 1981 the village also had three persons who belonged to the scheduled tribe.

By 1991 the total number of households had increased to 137 and total population was 700. The decade 1981-91 witnessed a marked improvement in the literacy rates. With the female literacy rates having more than doubled (34.12 per cent), the overall literacy rates became close to 55 per cent. This decade also witnessed an increase of the scheduled caste population by one percentage point and so was there an increase in the total number of persons belonging to the scheduled tribes. Ganeshpur had a total number of 160 main workers in 1991 which means that the workforce constituted 22.86 per cent of the total population. Of these just below two-thirds were engaged in agriculture while the rest were engaged in forestry, construction, transport and services.

As far as the various infrastructure facilities are concerned, Ganeshpur was quite well served since facilities such as post office, panchayat bhawan, primary and junior basic schools, bus station and market are all available within the district. Since it has a bus station, it also follows that there is a pucca road right upto the village. fair price shop, co-operative society office and the community centre are within 2-3 kilometers of Ganeshpur while for facilities such as Highschool/Inter College, degree college, hospital and veterianary services the people go to Uttarkashi.

The main source of living, as already brought out by the distribution of main workers, is agriculture and animal husbandry. The main crops cultivated are paddy, wheat and urd. Besides this cultivation, vegetables is also taken up on a commercial basis as the vegetables find a ready market in the township of Uttarkashi. Although the earthquake did affect the productivity adversely, the adverse affects were far less as compared to what were found in the case of Didsari.

The earthquake left behind 47 dead persons in Ganeshpur while compensation was paid out for 45 and the total amount paid was Rs.13.50 lakhs. Besides this 74 persons were also injured for which a total cash compensation to the tune of Rs.1.90 was provided. The people, on the other hand, disagreed with these figures claiming that 125 were actually injured of whom 11 were injured very seriously. Since the district level doctors prepared the list of injured persons, those who were left out received no compensation.

The households belonging to scheduled tribes (12 households) maintain sheep and, although their primary occupation is agriculture, they are also engaged in weaving. One particular family as many as 500 sheep. All these families have complained that although their equipment such as 'Ranch' (weaving frame) and 'Charkha' were destroyed, they received no compensation for this loss. These families have been producing woollen yarn and weaving blankets. As a result of this damage their earnings from this activity

declined and so they had to sell off some sheep for purchasing new equipment.

Ganeshpur was rather fortunate in the sense that only 5 animals died and a total compensation of Rs.5300 was provided to cover their loss.

All the houses of Ganeshpur were completely destroyed. Here too we have conflicting data regarding total households (137 as shown in Table 2.9) and houses destroyed (203 as shown in Table 2.8). The reason for this discrepancy have already been explained while talking of Didsari. The people received a total compensation of Rs.20.30 lakhs for the reconstruction of their houses. Almost 40 per cent of the old houses were constructions of wood, mud and stone with roofing material being slate. The rest were similar but with RCC roofing. The houses were rather heavy and consequently they crumbled down with the intensity of the earthquake.

Since the Tata Relief Project was undertaking the free reconstruction of all the damaged houses in Ganeshpur, the local people were not provided any formal training for the construction of earthquake resistant houses. The Tata team had its own design which was adopted in the construction work. Despite the fact that every individual was provided a two room houses by Tatas, the people were not satisfied with the accommodation. The second objection raised by the people was that these residences had no provision for keeping their animals. In the hills the people generally keep their

animals on the ground floor and they themselves live on the first floor. As a result of these problems around half the total families have also constructed separate residence in accordance to their needs. In order to build earthquake resistant houses these people visited their friends or relatives in the adjoining villages where training camps had been held and training regarding model houses imparted.

Among the scheduled caste population 8 households belong to blacksmiths whose products are sold in the local market. Three households are carpenters. However, in all the 11 households agriculture is the primary occupation. In the other villages carpenters were identified and were imparted training in the construction of earthquake resistant houses. Although the village itself did not have a training camp, the village Pradhan was invited to attend a training programme in one of the adjoining villages. But no such invitation was extended to the members of the three carpenter households.

Despite the fact that every individual household was being provided a house by Tatas, the government went ahead with its scheme of house subsidy, material distribution and provision of loan. Under the scheme of providing building material 4466 tin sheets, 3451 bags of cement and 294 quintals of iron rods were distributed in Ganeshpur. (Table 2.12). These were utilised by the people either for construction of their own residences besides the one already provided under Tata Relief, or else for the construction of

sheds for housing their animals. Ganeshpur, therefore, provides the classic example of people going in for self construction of their residences to suit their needs even in the situation when a free house had already been provided to them.

JAMAK

The village Jamak is located 14 kilometers towards the north of Uttarkashi on the banks of the Gangotri. It is barely one kilometer away from the Maneri reservoir. While the census of 1981 was being conducted the village population had got artificially inflated since a large number of workers engaged in the construction of Maneri dam were staying here along with their families at Jamak. However, by the time of the 1991 census the construction work had gone back and Jamak was left with its original inhabitants only. consequently it will not be appropriate to analyse the population between 1981 and 1991 and so we will therefore confine to figures of 1991 alone while talking of its demograpahic characteristics. It is fairly big with an area extending over 117.44 hectares and a total population of 344. The females have a slightly higher proportion in the overall population (52.32 per cent). The village has a very low population of scheduled castes (14.83 per cent) and has no one belonging to the scheduled tribes. In terms of literacy it fits into the overall trend

of the area with a rather low literacy rate among females (32.22 per cent) as compared to the males (60.16 per cent).

Jamak has a high percentage of workforce to total population (47.38 per cent). However, the people are predominantly engaged in agriculture which covers over 96 per cent of the main workers. The rest are engaged in forestry, construction, transport and services. The land in the village is quite fertile and the net area sown is around 75 hectares of which two-thirds is irrigated land. However, their source of irrigation has tended to dry up after the earthquake. The main crops cultivated are paddy, wheat, potatoes and mustard. Besides, this mandua and masur are also grown. As a result of the earthquake nearly 30 per cent of the agricultural land was damaged. But no relief was given to the cultivators to reclaim the land thus damaged. The people, therefore, had to find their own means to set their fields right. Both the damage to the agricultural land and drying up the source of irrigation have adversely affected the agricultural productivity by 25-40 per cent.

The village is fairly well-served in terms of social and economic overheads. It is the only village from among our selected villages where the water and power supply were not adversely affected. Jamak has a primary school as well as a community centre within the village. Pukka road, Bus station, post office and panchayat bhawan are all within one kilometer from Jamak. Similarly the children have to travel just about 2 kilometer for the junior basic school and for

attending high school or intermediate classes. The other facilities available within 2 kilometers are hospital, market, fairprice shops and office of the co-operative society. In fact the facilities which are far away are the veterinary facilities and the degree college, both of which are available at a distance of 15 kms.

Jamak was possibly the worst affected village as a consequence of the earthquake. While the Maneri dam was being constructed, a tunnel was dug up which passes under Jamak. The local population is quite convinced that the land of Jamak had become weak as a result of the blasting which had to be done for digging up the tunnel. This in turn made the foundations of the houses weak as well as and so not a single house was spared by the earthquake from total destruction. The houses mainly had roofs of RCC slabs and the walls were of stone. The RCC constructions had been done by the people once the construction work of the dam was undertaken. The structures were therefore very heavy and the construction faulty. A total of 80 houses, therefore, collapsed completely and the people were paid a compensation of Rs.8 lakhs for the reconstruction of these fully damaged houses.

The official records indicate a total of 70 deaths in Jamak and compensation was paid to the tune of Rs.20.10 lakhs for 67 persons. However, according to the residents of the village 70 had died on the day of the earthquake itself. Two

more, who were very seriously injured, died after about 2-3 days while another 4 persons, who too had sustained serious injuries, died after about two months. None of these six were included in the list of those declared dead in the official records and so their family members received no compensation. The relatives of these dead persons are currently engaged in litigation with the administration on the issue of non-payment of compensation.

Similarly the official records related to injured people declares a total of 69 injured and to whom a compensation of Rs.1.74 lakhs was distributed. The unofficial figures of the injured compiled by the local people is almost three times this figure (203 persons). The main reasons cited behind this discrepancy are many.

- (a) All the family members had sustained injuries and so they were not in a position to visit the nearest medical centre to get themselves registered.
- (b) Even when the team of Potwaris and subsequently the BDO came to the village for drawing up a list of beneficiaries, the village Pradhan was the main source of information. It was the negligence on the part of the Pradhan that the list was left incomplete.
- (c) At the time of the earthquake people did not even know that relief would eventually be paid. In fact getting this relief was not even the top priority of the people. Their first concern at that time was to get the injured

family members treated. Such persons failed to get listed in the initial stage and are now repenting when nothing can be done.

There are similar discrepancies as far as the official record of dead animals (39 dead animals) and the unofficial estimates (around 150 dead animals) is concerned.

The primary school building had collapsed completely in Jamak and its reconstruction work has been undertaken by the Garhwal Mandal Vikas Nigam. At the time of our visit, the construction work was in progress. The classes were then being held in the community centre building which had been constructed by the DGBR for providing shelter to people soon after the earthquake.

In order to impart training to the people regarding the construction of houses which would be earthquake resistant, people were asked to visit Didsari where the engineers from The Action Research Unit for Development (TARU) had set up a training camp for demonstrating how such houses should be constructed. However, only the village Pradhan and only a few interested persons attended this camp. Those persons who have subsequently constructed their own houses have not strictly followed the guidelines which TARU had provided. By and large they have followed their own traditional technology and have made some attempts to incorporate some of the specifications set aside for constructing earthquake resistant houses. On the whole, therefore, the houses have

not been properly designed here to safeguard them in the eventuality of an earthquake at a future date.

Two organisations namely ADRA and Vishwa Hindu Parishad took up the task of constructing houses for the affected population in Jamak. Neither of the two agencies took up the construction work for the entire village. ADRA has constructed 32 houses. They claim that they passed on the houses to those whose economic condition was the worst in the village. However, people alledge that the houses were passed on to those who were close to the gram pradhan. Our own observations during the survey gave evidence of the fact that the criterion of most needy was not adhered to properly. The Vishwa Hindu Parishad also took up 32 constructions but they did not construct the houses fully. They constructed the houses upto the plinth level and after that they erected angle iron structure with tin sheet roofing. The beneficiaries, who were allotted these houses had to construct the walls on their own. Their list of beneficiaries was drawn up from among those who had not been selected by ADRA. However, only 6 persons have constructed these houses and have started living in them as well. Even all the ADRA houses were not occupied since their finishing was not complete. Both the ADRA houses and the VHP structures have kept in mind the appropriate technology from the point of view of resistance to an earthquake.

KAMAR

This is one of the interior villages taken up for detailed survey by us. It is located approximately 8 kms from the site of the Maneri dam and is linked to Maneri by the Jila Parishad road. It is at a higher altitude than the other villages. In fact beyond Kamar there are no more villages in the north. It has an area of 148.24 hectares and had a population of 260 in 1981 comprising of 133 males and 127 females. The population was divided into 51 households. Among the five selected villages, Kamar had the lowest female literacy rate in 1981 (1.57 per cent) as the entire village had only two literate females. Thus the overall literacy rates too were low at 36.62 per cent. By 1991 the population had increased to 309 persons but without much alteration between the proportion males and females. The decade witnessed virtually no difference in the literacy rates thereby making Kamar a very backward village from the point of view of education.

Being a remote and backward village its people are almost entirely dependent on agriculture. Only 1.84 per cent of its total main workers are engaged in forestry, construction, transport and services while the rest all fall back on agriculture as their main source of livelihood. The main crops are wheat and potatoes. The productivity of potatoes is quite good but they are unable to sell their produce at remunerative prices since the 8 km distance to

Maneri is a steep climb and so transportation is very expensive and uneconomical. They rely mainly on the local contractors who do not offer competitive prices. But they have no choice in the existing circumstances.

Maximum damage to agricultural land possibly took place in Kamar and upto 50 per cent of the land was adversely affected. The terraced fields developed cracks and crumbled down. The repair and reclamation work is both time consuming, difficult and involves a sizeable expenditure. The government offered no compensation to the affected population to meet their requirements. They have, therefore, done the repair work with their own resources and that is why the work is not yet complete. By the time we went for our survey only about half the work had been completed. The people managed to survive ever with the state of damaged land because of the fact that agricultural incomes were supplimented through income from animal husbandry. There are no families who do not posses cows, buffaloes and sheep. The sheep particularly provide reasonable earnings through the sale of wool.

Kamar was lucky in the sense that only 8 lives were lost during the earthquake. The record also tallies perfectly with the unofficial records and compensation paid out by the government was of the order of Rs.2.40 lakhs. However, there is a lot of discrepancy as far as official and other records related to injuries is concerned. The official record claims that a total of 14 persons were injured and they were given a

total of Rs.40 thousand as compensation. The villagers, however, hold the view that nearly 130 persons received injuries. The main reason attributed towards this discrepancy is the remoteness of the village from the district and Tehsil headquarters. The injured could not be taken to the medical centres at Maneri, Uttarkashi or Bhatwari. The earthquake had rendered the village inaccessible and so the relief team of doctors could visit the village of after about two weeks and then also there was a lot of irregularity in the listing of the injured persons. The army helicopters took away some of the seriously injured persons but those with lesser injuries were not in a position to receive medical treatment for quite some time.

The villagers also complain of irregularities regarding the listing of dead animals. They claim that 40 big including cows and buffaloes and 30 small animals had died while the official records mention a total of 17 dead animals for which around Rs.15 thousand was paid out as compensation.

All the houses of Kamar were totally destroyed. According to the official list a total of 71 houses were completely destroyed and the compensation provided for this amounted to Rs.7.10 lakhs. However, according to our survey team two houses were partly damaged. Both these houses had a lot of wood in the construction and so it did not collapse. It escaped with some cracks. Both these houses have been repaired and people have been living in them along. Almost all the houses prior to the earthquake were made of stone

wood and had slate roofs. That is why the intensity of damage was so high. The villagers of Kamar were invited by the PWD engineers to Maneri where they were imparted training regarding the latest technology of earthquake resistant houses. The situation regarding reconstruction of damaged houses was the worst in Kamar. No voluntary agency worked in Kamar to construct houses as was the case in many other and so the entire responsibility was of the individual concerned. At the time of our survey only around 40 per cent of the households had constructed their houses. The rest continued to stay in temporary shelters made of tarpantine, and tin sheets etc. The main reasons cited for the inability to reconstruct their houses were their poor economic condition, the argument that compensation amount was inadequate, loan not sufficient and cement bags could not be accepted since these were being distributed during the monsoon season when a shelter was needed for the safe keeping of the cement. Besides this both the cement bags and construction iron had to be transported from Maneri at their personal expenses. The transport cost was exorbitant and people could not afford the same so they declined to accept both the materials. Thus only 2556 tin sheets were distributed in Kamar.

Not all the reconstructed houses have been designed in accordance with the appropriate technology. This is so because everyone did not attend the training camp related to house construction which was held in Maneri. Only those who

attended the camp and a few others who took the advice of these trained villagers have followed the appropriate construction technology.

While we find that 71 houses have been shown as fully destroyed among a population comprising of 55 households, it is rather surprising to note that 3 persons have not received any compensation for their damaged houses. Till April 1994, their efforts to get relief were in vain. It may be that the DM of Uttarkashi had visited Kamar and these three persons had met him to plead their case. It is not known as to the final outcome of their efforts.

Being a remote village, Kamar does not have well developed facilities except for a primary school and a community centre, which is located within the village (Table 2.11). For most of the facilities people have to go down to Maneri and for facilities such as higher education and veterinary services they have a choice between Bhatwari and Uttarkashi. Both the drinking water and electricity supply got disrupted after the earthquake and have yet to be restored. The people are totally dependent now on the nearby sources of water to meet their drinking water requirements.

NETALA

This village is located approximately 8 kms from Uttarkashi on the Uttarkashi-Bhatwari route. It is around

19 kms from Bhatwari. Out of the 5 villages selected by us, it is the second largest in terms of area (163.58 hectares) but the largest as far as total population is concerned. In 1981, the total population was 593 of which 52.29 per cent were males and among them the literacy rate was reasonably good (64.56 per cent). The females, as a result of their low literacy rate (7.22 per cent), pulled down the overall literacy rate of the village (37.77 per cent). By 1991, the population had increased considerably to nearly reach the 900 mark. Even the scheduled caste population more than doubled over the decade. The literacy rates also witnessed an improvement in 1991 as against 1981 (Table 2.9). A small scheduled tribe population is also found in the village.

Netala had a fairly high percentage of workers. In a total population of around 900 there were 491 main workers of whom around 84 per cent were cultivators (Table 2.10). The village has a total area of 100 hectares under cultivation and almost one-third of this is irrigated.

The main crops cultivated are paddy, wheat, mandua and soyabean. The people informed that agricultural productivity had gone down by almost 25-30 per cent after the earthquake and also that the sources of irrigation had also decreased.

The remaining main workers are mostly engaged in the service sector. The village does not have any industrial base as such but a training centre has been set up after the earthquake by the Bhuwaneshwari Mahila Ashram with financial

assistance from CAPART. The training centre is imparting training for spinning and weaving and in knitting sweaters and carpet manufacture to females. So far one batch of females have successfully completed their training in one or more of the above mentioned areas. In all 23 females were trained.

The Bhuwaneshwari Mahila Ashram also did a very commendable job in providing immediate relief after the earthquake by providing shelter, medical facilities, foodgrains and fodder to the affected population. Netala also has a polytechnic where vocational training in some specified activities is provided.

The houses of Netala, prior to the earthquake were constructed using mud and stone while the roofing material was slate. The remaining houses were different in the sense that their roofing material were RCC slabs. While in a large number of villages team of engineers visited and trained the people with respect to construction of earthquake resistant houses, no such training was organised within the village as such. However, some persons went over to Maneri or other places to participate in such camps held there. While constructing their houses, people have, therefore, kept in mind the tips which had been provided in the training camps. Those attending these meetings passed on the information to the other interested individuals. Almost 60-65 per cent of the households were found to be living in such

new technology houses. The remaining houses are yet to be constructed and these households continue to reside in temporary shelters. The relief material distributed for house reconstruction included 5124 tin sheets, 3757 bags of cement and 315 quintals of iron.

The Ram Krishna Mission also took up the responsibility of house construction. They constructed a total of 62 houses but left the flooring incomplete. This work had to be completed by those who were given these residences. For the selection of beneficiaries, the Mission took the assistance of the village Pradhan. This resulted in a mixed bag of beneficiaries including the needy as well as the not so needy persons.

The number of persons have died is officially placed at 47. However, two persons who were seriously injured at the time of listing died after about a month and so there was no compensation paid for these deaths. Their relatives have, therefore, moved the court in order to secure their due.

The total number of injured persons according to the inhabitants of Netala was 155 as against 71 which is the figure appearing in the official records. People claim that there were gross irregularities in which those genuinely injured were left out from the list. As against this there is an instance of an individual who was shown as being seriously injured and a compensation of Rs.5000 was paid despite the fact that this particular person was in service

in Punjab when the earthquake struck Uttarkashi. This particular incident did raise a lot of here and cry and there were a number of demonstrations in protest against this irregularity. However nothing was done in this matter by the ADM Relief. Such irregularities are also reported with respect to the total number of dead animals. It is claimed that even animals died after initially being injured and for those dead animals no compensation was granted to their owners.

Netala is quite well developed from the point of view of various infrastructure facilities. Among the facilities which are available within the village the important ones are post office, community centre, primary and junior basic schools, high school, pucca road, market, fair price shop and office of the cooperative society. Only for facilities such as hospital, degree college and veterinary services the people have to visit Uttarkashi.

On the whole therefore we observe that our villages have a heavy dependence on agriculture which is the main activity of the people. By and large there is no controversy between the people and official records regarding persons dead and houses totally damaged except for the fact that those persons who died at a later stage following serious illness, were not compensated for. As far as house collapses are concerned there have been obvious irregularities and consequently total number of houses damaged in each village is higher than the actual number of households. There is obvious resentment

among the people regarding number of persons injured as well as dead animals. We will now devote some space to draw a very brief outline of our three observation villages.

MANERI

This village is located 14 kms from Uttarkashi on the Uttarkashi-Gangotri route. The Maneri village overlooks the Maneri reservoir and hydro-generation plant which suffered only superficial damage by the earthquake. It has an area of 220.97 hectares and in 1991 it had a total population of around 2000 persons. There are around 120 households and the village covers two hamlets. There are a few scheduled castes (45 in all) living in the village. As a result of the Maneri reservoir the village has most of the infrastructure facilities such as post office, panchayat Bhawan, community centre, primary and junior basic school, pucca road and bus station, medical facilities and veterinary services and also facilities such as market, fair price shop and co-operative society within the village itself. Only for higher education the students have to travel to either Bhatwari or the district headquarter. (Table 2.11).

The main activity agriculture, revolves around the production of paddy, wheat, mandira and potatoes. However, potatoes are not being grown strictly from the commercial angle. Since a fair proportion of the net area sown is

irrigated the cultivators have given greater stress on the cultivation of paddy and wheat. The cultivators claim that after the earthquake the productivity of land has gone down by around 25-30 per cent.

A total of 34 persons expired in the village and even the village records match these figures. The amount of compensation paid was Rs.9 lakhs. There is however, conflict regarding the total number of injured persons because people say that 60-70 persons had sustained injuries while the official figure is 14 injured. Luckily there is no problem regarding the death of animals.

Maneri was one among the very many villages with heavy damage to the houses. All but one out of the 120 houses collapsed totally and a cash compensation of Rs.11.95 lakhs was made for their reconstruction. Before the earthquake the traditional houses were made of mud and stone with roofing of slate or RCC slabs. Wood work was also found in some houses. After the earthquake TARU invited people for training at Ongi village which is one of the hamlets of Maneri and organised a 4 day training camp. They gave the people technical knowledge regarding the construction of houses keeping in view the possibility of future recurrence of an earthquake. TARU has advised people to go in for single storey constructions. People have by and large followed the advice and so most of the new constructions are single storey and have also kept in mind the specifications given in terms of earthquake resistant technology.

The Vishwa Hindu Parishad constructed 107 structures. The structures represented those constructed by them at Jamak and so people had to do the finishing work themselves after they were allotted these structures. Only about 30-40 per cent of these structures had been fully completed by the time of our survey.

Public buildings such the primary school and the Intermediate college collapsed completely. The VHP constructed a small hall with tin sheet roofing to serve as a temporary structure for the primary school. The Inter College is being reconstructed by the PWD with World Bank aid. In the absence of a proper building classes are being held in the open.

The Vishwa Hindu Parishad has also started a training centre where ladies are being imparted training in tailoring and embroidery work. One batch of around 24 ladies had successfully completed their training from this institution. The VHP had approached the CAPART to fund this training centre but reply had not been received in this connection from CAPART till the time of our survey work.

SYABA

Our second observation village is a remote village and is situated around 12 kilometers from Bhatwari and nearly 21

kms from Uttarkashi. It is approximately 4 kilometers away from the pucca road near the village of Saura. The total area of the village is 190.12 hectares and it supports a population of 249 persons and 51 households. Since it is among the remote villages, it is less developed in terms of facilities like education and health etc. The only facility available within the village itself is the presence of a primary school. For all the other facilities the community has to cover a distance ranging from 3-12 kms (Table 2.11).

The main crops grown in the village are paddy, wheat and potatoes. Despite the fact that agriculture is the main activity, the yield rates are low and these have reduced further after the earthquake thereby reducing the activity to a subsistence once. Considerable damage was caused to the agricultural land and numerous terraced fields broke down during the earthquake. A team of officials belong to the Soil Conservation Department had visited the village and made an assessment of the loss by taking measurements of the fields which had developed cracks or had sunk or broken down. However, neither were the people provided material or technical assistance in repairing these fields nor were they provided any financial assistance in order to cover their losses.

Almost all the households have at least one cow and a buffalo each. The milk produced is entirely for domestic consumption. There are around 15 households who rear sheep. The wool is sold in the market at Bhatwari. Besides the

sale at Bhatwari, villagers from within the village, as well as a few from the nearby ones, also come over to purchase the wool produced by these households.

Prior to the earthquake piped water supply was being provided by the Jal Nigam. As a result of the severe earthquake, the pipelines broke down and these have not yet been set correct. The villagers have to cover a distance of just over one kilometer to fetch water. Similarly the village also had electricity prior to October 21, 1991 but the supply broke down and this too has not been restored till date.

Looking at the intensity of the earthquake still further, it will be observed that 9 lives were lost (Table 2.6) and a provision of Rs.2.70 lakhs was made to compensate the loss of these lives. The number of injured persons according to unofficial estimates maintained by the villagers in 55 which is almost twice as much as the official figures (28 injured). However there is not much difference between the official estimates of dead animals (31) and those maintained by the people (35).

All the houses of syaba were fully damaged by the earthquake and a total compensation to the tune of Rs.7.50 lakhs was paid in cash for their reconstruction (Table 2.8). Just as was the case in Kamar, the villagers turned down the offer of the authorities regarding distribution of cement bags and building iron as a part of the material help

provided for the reconstruction of houses. They claim that the cost of transportation is beyond their means and also that they did not have space to keep the cement bags either since the material was distributed during the monsoon season. In lieu of cement iron people were given extra tin sheets.

The traditional houses were made of mud, stone, wood and the roofing material was slate. Only a very few houses had roofing of RCC slabs. The village Pradhan and a few more persons were asked to attend the training camp conducted in village same. During which the people were imparted knowledge regarding the construction of earthquake resistant houses. They were advised to keep the roofing light and to make use of wooden beams in the house construction so as to keep them safe in the eventuality of any future earthquake. Almost all the houses of Syaba had been reconstructed and people had, by and large, kept in mind the tips they had been provided regarding earthquake resistant housing technology suited to their area. Thus all the new constructions have tin sheet roofing. It is, therefore, hoped that in the case another earthquake strikes at a future date the extent of damage will be much less.

No non-government organisation visited the village in order to assist people in providing long run rehabilitation facilities such as housing. However, a team comprising of members belonging to the Bhuvaneshwari Mahila Ashram visited the village for providing immediate relief such as medicines, tarpantine and food.

The primary school building, which was totally damaged, is being reconstructed with the help of financial assistance provided by the World Bank. Besides this the World Bank has also provided funds for the construction of a building for the proposed junior basic school in Syaba.

BAINA

Baina is yet another remote village located almost equidistance from Bhatwari as well as Ullarkashi (18 Kms). The village is spread on an area extending over 233.5 hectares and the total population of the village at the time of our survey was around 475 persons. The population consists of 13 scheduled caste households along with those of people from the general caste. Here too we find that the various infrastructure facilities are not well developed since it is located 4 Kms from the main road at Maneri and there is a very steep climb from Maneri to Baina.

The predominance of agriculture, and that too basically subsistence agriculture, is seen from the fact that 95 per cent of the main workers are engaged in agriculture. The remaining 5 per cent workers are carpenters, masons and persons engaged in the service sector. The main crops cultivated are paddy, wheat, mandua, soyabean and local pulses. After the earthquake almost 50 per cent of the agricultural land became adversely affected since cracks

developed in the fields and the fields caved in while terraced fields were demolished. However, like in the other villages, here too people received no compensation or other assistance for reclaiming their agricultural land. As a result only those who had the resources were able to carry out the repair work on their fields. The people claim that on the damaged land agricultural productivity has gone down by upto 50 per cent. Besides the rate of the agricultural land, another contribution factor towards the decline in productivity has been the gradual depletion in the sources of irrigation.

The villagers are also engaged in horticulture and fruits such as apricots, peaches, malta and lemon are grown. However inaccessibility to the market centre by way of high transportation cost, puts a severe constraint on the sale of the fruits. Thus only a small percentage of the fruits grown reach the market at Maneri.

A total of 8 persons died in Baina in accordance to the official records (Table 2.6). There is no conflict with regard to this figure. But the actual position is that 3 more persons, who were not residents of this village but had come over from a nearby village, also expired. Fortunately, their family members could convince the authorities about the genuineness of the deaths and so they were listed among the dead in the village to which they belonged.

The village Pradhan, along with a few others, personally prepared a list of the injured persons (about 70 persons) and had sent it for approval to the authorities at Maneri. However, the official list has only 35 injured persons. The compensation paid to the dead and injured persons was Rs.2.40 lakhs and Rs.0.79 lakh respectively. The villagers were also dissatisfied on the ground that as against a total of around 70 dead animals, compensation totalling Rs.23,650 was paid for 25 dead animals only (Table 2.7).

All the 120 houses of the village collapsed and broke down completely and the villagers received a cash compensation of Rs.12 lakhs for their reconstruction (Table 2.8). All the old houses had been constructions utilising mud and stone and with slate roofing. There were a few wooden houses and these were over 60 years old. Although even these were rendered unfit for living by the earthquake, the destruction caused to them was not as much as in the case of those houses having slate roofing.

The Vishwa Hindu Parishad constructed 107 semi-constructed structures and handed them over to the people. The people were expected to complete them on their own. However, most of the people continue to remain living in these incomplete houses while a small percentage of people have completed the structures. Besides this, there are also a few people who have constructed their own houses as well. Although the village itself did not enjoy the facility of a proper training programme for the construction of earthquake

resistant houses, many interested persons attended the camp organised at Maneri which had been organised by TARU. TARU had laid emphasis on the construction of small single storeyed houses with light roofing. The villagers of Baina feel that this technology and specifications do not suit their requirements and have, therefore, paid little heed to the instructions which had been provided by the engineers. With a view to safeguard their houses and property, the people are trying to introduce their own safety measures but even now slate roofing is being carried out. There is, therefore, every possibility that if there is a recurrence of an earthquake in future, all such houses will once again collapse completely thereby causing loss to property and human lives.

In fact the very village itself is rather dangerously located. The earthquake caused a very big crack and as a result of this the land is slipping. The SDM Bhatwari had undertaken a tour of this village and had issued orders for the rehabilitation of people elsewhere after surveying the entire area. Till June 1994, however, nothing had been done in this regard.

As against Kamar and Syaba, the inhabitants accepted cement and iron provided for construction and the building material included 2640 tinsheets, 2040 bags of cement and 174 quintals of iron.

This was a brief sketch of our selected as well as observation villages. We will, in the next chapter, focus our attention on the role played by the non-governmental organisations after the earthquake.

CHAPTER III

THE ROLE PLAYED BY NON-GOVERNMENTAL ORGANISATIONS IN THE UTTARKASHI EARTHQUAKE

Non-governmental organisations are, as a sector of society, a diverse entity operating under different paradigms. In India, NGO's engaged in grassroot development work are largely the product of various social movements such as Gandhian, Christian Missionary, Marxian and the student movement of the late 1960's. Ideally the NGO's represent the nucleus of experimentation in grassroots development and mobilisation work with poor communities. By virtue of their work a large number of NGO's have become efficient welfare delivery systems with substantial legitimacy from the community, and drawing support from the programmes designed by either the state or the private funding agencies.

Rural development, besides, the eradication of rural poverty, also addresses itself to issues such as development in areas like health, sanitation, education, welfare and

recreation etc. The central and state governments have the obligation to initiate and implement programmes for these various components of rural development. However, government alone can not do this work and this is where the NGO's can play a positive role. Accordingly the Seventh Plan document gave a place of some importance to the role of voluntary agencies in rural development. They have, by and large, assisted governmental efforts in;

- (i) *bringing to the knowledge of the government difficulties experienced by people in getting the benefit of government programmes to which they are entitled;*
- (ii) *reporting the irregularities in the implementation of the programmes and to ensure that the programme reaches its destination without getting syphoned off enroute; and*
- (iii) *in many instances they have motivated local community to generate resources from within the community to meet all those needs which fall outside the perview of the governmental programmes.*

It must not be assumed that the role of these organisations is confined only to the rural areas. Various NGO's can be seen operating in the urban areas as well where they are once again deeply involved in the various programmes related to the upliftment of the urban poor.

The distinct advantage which these NGO's enjoy is that they live and work among the people. This results in a close and harmonious relationship between the community on one hand and the NGO's on the other, based on mutual trust. As a consequence it has been seen that the results achieved by the work undertaken by an NGO is much better than what could have been anticipated if the same had been undertaken in a routine manner by the government machinery.

It is not just that the NGO's are engaged in simply developmental activities. They have been equally active whenever society has been in any type of need. This the NGO's have been in the forefront whenever a natural calamity has struck any area. In all such cases numerous NGO's have been seen coming forward and assisting the people side by side with the governmental agencies in providing all sorts of relief to the affected population. This was evident even in the case of the Uttarkashi earthquake which hit the Garhwal region on the night of October 21, 1991.

In this chapter, we will focus our attention on the work carried out by the voluntary agencies in providing relief to the victims of the earthquake with special reference to the long term rehabilitation measures undertaken by them. For this we will utilise secondary information collected through different sources as well as the primary information which was compiled by us in the field survey of the five villages selected for the study.

As soon as the news of the disaster was flashed across by the different media relief poured in from every part of the country by way of food, medicines, clothing, blankets and other material. Relief was accompanied by a number of volunteers who also rushed into help the needy people and these included various NGO's as well. CAPART (The Council for Advancement of People's Action) is the agency which co-ordinates the work of the voluntary agencies all over the country and provides them financial assistance to carry out the work in which the different agencies are engaged. Since Uttarkashi was the worst affected district, CAPART decided to focus its attention on it. Moreover, it decided to concern itself with the long term rehabilitation measures rather than be involved in matters pertaining to providing immediate relief. While immediate relief is essential it is the long term rehabilitation measures which put the people back on their feet. In the absence of such long term measures the people affected by the tragedy are caught in a dependence trap.

The district itself did not have very many voluntary agencies. As a result, when the CAPART team visited the district in mid-November it was quite clear that NGO's from outside will have to be identified keeping in view the dimension as well as the quality of long term rehabilitation measures which had to be carried out. The NGO's to be selected had to be those who would commit themselves in being party to a long term rehabilitation efforts. Within a short

period of 3 months itself six organisations had been identified which were willing to get involved in long term rehabilitation efforts. These groups were:

- (i) *Bhuvaneshwari Mahila Ashram, located at Anjani Sain in Tehri Garhwal district. The organisation had moved into Uttarkashi soon after the earthquake to provide immediate relief in some of the worst affected areas.*
- (ii) *VIKALP and DISHA were two voluntary organisation both with their headquarter at Saharanpur.*
- (iii) *RUCHI and SUTRA. both these voluntary organisations are from Himachal Pradesh and have a long experience of working in the hill region.*
- (iv) *SAMTA which is from chakrata in Dehra Dun district. This organisation was already working in the Yamuna valley and were, therefore, already involved in some relief work.*

Besides these there were a few more organisations who also were involved in the district for some more time even after the initial relief operations. Among these groups the People's Science Institute (P.S.I) from Dehra Dun and The Action Research Unit (TARU) from Delhi took upon themselves the task of providing support through training and exposure programmes on construction techniques. Other organisations such as CASA, ADRA and TATA STEEL TOOK up the construction of

houses, with their own resources, in some selected villages. The others who too stayed beyond the initial relief operations were SIDH from Mussoories and INHERE from Almora.

As far as the six identified NGO's are concerned, CAPART was the facilitator and they had consultation with the state as well as the district administration and on the basis of those discussions each NGO identified a few villages where they would take up rehabilitation work. The main considerations kept in mind during the selection of villages were the extent of damage caused by the earthquake; scheduled caste population; relatively remote areas since such villages had been touched only marginally by relief operations and where no other NGO was already working on long term rehabilitation such as housing etc; and each voluntary organisation selected villages which were in a cluster. On the whole, therefore, around 40 villages were adopted by these six organisations. The details of the villages can be seen in Table 3.1. All the six organisations felt that prior to taking up any programme it was essential to establish some rapport with the village community. This was necessary because the area was not familiar to them and also because participation of the local population is a prerequisite for the success of all such programmes.

The destruction caused by the earthquake had been primarily on account of the fact that a majority of the houses had collapsed and were damaged fully resulting in

Table - 3.1 : Amount Sanctioned by CAPART To NGOs and Adopted Villages

Sl. No.	Institutions	Amount Sanctioned (Rs. in lakhs)	Block	Adopted Villages
1.	RUCHI, SOLAN (H.P.)	2.46	DUNDA	Bhotiyara, Ludadasauo, Dikhouli
2.	SUTRA, SOLAN (H.P.)	7.00	DUNDA	-- do --
3.	DISHA, Saharanpur (U.P.)	10.28	DNDA	Udalka, Thati, Dadma-li, Jamakh, Danda,
4.	VIKALP	3.81	DUNDA GANKH HTRAU	Karah, Kunshi, Punjar, Jugaldi, Prajiyala, Malasi, Badethitelli,
5.	B.M.A. TEHRI GARHWAL, (U.P.)	9.89	BHATWARI RAITHAL MATALA HURRI	Kunatli, Hona, Salag, Tihar, Kunjan, Bhakauli Jakani, Pilag, Shila Bhukki, Syawan, Shala
6.	SAMTA DEHRADUN (U.P.)	2.40	PURAUULA NETRI NEEF	Sukdana, Madrali, Puraul, Saral, Mairana, Kurshali Banas, Nandgaon, Gangadi

Source : *Uttarkhand Vikas Vibhag, (U.P.)*

entire families being crushed to death. Irrespective of the type of construction - RCC roof or slate; brick or stone; mud or mortar; single or double storeyed - had all crumbled down. There was therefore an urgent need to think in terms of earthquake resistant construction for the hill areas. This,

therefore, became a logical starting point for the work of the NGO's. The NGO's held discussions with a large number of institutions such as CBRI, HUDCO, Roorkee University, P.W.D., University professors and engineers. On the basis of these discussions it was felt that;

- *housing techniques and designs would need to be demonstrated in the affected villages.*
- *the focus must be on the poor and the houses should be practical as well as affordable to build.*
- *as far as possible local material should be used in order to reduced dependence on outside help.*
- *masons in particular would need to be trained such that essential precautions and techniques are easily taken care of.*
- *an awareness needed to be created in the village about the simple DO's and Don'ts of construction.*

Every NGO insisted that they would start construction only if the land was provided by the village as evidence of the desire to participate and contribute. This was achieved and in some cases the donation of land was followed up by shrumdan for land levelling as well.

The housing aspect involved various challenges and these brought out some issues and problem areas;

- There were no type design which could be straight away adopted. In the case of the hills consideration had to be made for the extreme cold, high cost because of difficult access, limited building space etc. Thus there was need to develop earthquake resistant models which would be relevant for the hills, using locally available material and reasonably cheap.
- Certain techniques were quickly seen to be relevant and essential for widespread adoption - light roofs, a "frame" for the house with bands running right through, small openings and so on. While these were immediately adopted in the construction by the NGO's, even in the villages where demonstration buildings were taken up, families were still rebuilding their houses without bothering to keep these important details in mind.
- Since Uttarkashi district has a variety of locations for the different villages such as villages in valleys, in the higher altitudes, along the river and along rivers, the materials available for construction also vary and so there has to be some "fine tuning" even down to the village level, particularly for materials to be used in construction.

- In traditional housing, wood was a significant component. In fact it is an ideal building material for constructing earthquake resistant houses in the hills where wood is easily available as well. However, it has been banned for construction keeping in mind the environmental needs. We have therefore to work out means through which forests can be raised such that people can utilise wood in construction to the desired extent.
- while costs of both, materials and labour, went up, the labour situation was compounded by the scarcity. Masons therefore came from as far as Bihar to build the structures in the remote villages.
- training programmes for masons were conducted such that they would internalise at least some of the more important techniques. To a certain extent this has helped but the demand and supply equation, and the fairly widespread import of skilled labour made the situation more difficult.
- awareness camps were organised in the affected villages by the district administration as well as the NGO's with the help of posters as well as video films. However, if a meaningful impact has to be made on the people such awareness camps have to be continued over a longer period.

The voluntary organisations which were selected by CAPART to undertake certain programmes of long term rehabilitation like construction of community centre buildings, houses, organisations of beneficiaries and other socio-economic development programmes. These organisations were given assistance under the Jawahar Rozgar Yojana (JRY) Scheme, Development of Women and Children in Rural Area (DWCRA) and Organisation of Beneficiaries (OB).

DTSHA, one of the six selected organisations, took up a composite project which included health, training in knitting, tailoring, animal husbandry, agriculture, construction etc. Under DWCRA they are providing training in knitting and tailoring along with support activities like Balwadi, adult literacy for women, nutrition etc. Under the JRY scheme it took up the work of constructing two demonstration community centre. The rationale behind it was that this would serve the purpose of demonstration as far as the construction technology to be adopted was concerned and it could then be subsequently utilised for community programmes. The Bhuwaneshwari Mahila Ashram (BMA) undertook programmes such as random rubble clearance, construction of community centres and demonstrational houses. The task of generating awareness under the Organisation of Beneficiaries (OB) Scheme was handled by SUTRA and DTSHA in the earthquake affected areas.

The NGO's look up the work of constructing model houses in the following villages:

(a) Dunda Village	-	DISHA
(b) Bhatiyara Village	-	RUCHI
(c) Kurha Village	-	VIKALP

Besides this the NGO's also built community centres using different materials and design from the point of view of making them earthquake resistant. These community centres were also cheaper as compared to the government estimates - ranging from Rs.140 to Rs.200 per sq. ft. as against Rs.225 per square foot as adopted by the government. The details regarding the villages where community centres have been constructed by NGO's is indicated below:

<u>NAME OF THE N.G.O.</u>	<u>Villages where Community Centres are constructed.</u>
1. Bhuwaneshwari Mahila Ashram	Bhukki, Raithal, Didsari
2. DISHA	Dunda, Udalka, Damauli, Nakuri, Majak, Saur
3. SAMTA	Madali, Nandgaon, Sukhadala, Kharsali
4. RUCHI	Bhatiyara, Laudra
5. SUTRA	Kamad, Thandi
6. VIKALP	Kurha, Kungsi

These community centres have been completed by the various agencies who undertook their construction work. Initially an amount of Rs.1.25 lakhs was sanctioned per Community Centre. However, the amount was subsequently raised to Rs.2.00 lakhs.

Some of the other programmes which were undertaken by these six organisations were related to construction work of minor irrigation projects. RUCHI undertook the work for the construction of water storage tanks in the villages of Saund and Bhatiyara. Besides the storage tank a canal was also constructed in the Ludaurha village. Irrigation canal projects were undertaken by SUTRA in three villages while DISHA was active in one village. The details can be had from Table 3.2.

Table 3.2 : Minor Irrigation Projects Undertaken by NGO's

PROJECT	INSTITUTION	VILLAGE
Storage Tank	RUCHI	Saund and Bhatiyara
Canal Water and Storage Tank	RUCHI	Ludaurha
Irrigation Canal	SUTRA	Kamad, Bagi & Brahmpuri
Irrigation Canal	DISHA	Udalka

Source : Uttarakhand Vikas Vibhag, U.P.

As already indicated earlier, the institutions identified by CAPART also undertook programmes of training which would result in employment and income generation of the people. The details of these programmes can be seen from Table 3.3.

Table - 3.3 : Progress of Employment/Income Generation Projects

Sl. No.	Projects	Institutions	Village	Camps
1.	Sewing, weaving, embroidery and rabbit rearing programme	RUCHT	Bhatiyara, Landad, Saur, Dikholi	66
2.	Vegetable Training and Balwari Camps	SUTRA	Kamand, Kholad Bagi, Tandi, Kumar-kote	100
3.	Training and Production	DTSHA	Udalka, Dunda	50
4.	Handloom, Weaving Training Camps	BMA	Raithal	30
5.	Weaving Training Camps	BMA	Raithal	70

Source : Uttarkhand Vikas Vibhag, U.P.

While six voluntary organisations were identified specially by CAPART for carrying out long term rehabilitation measures in Uttarkashi, there were other voluntary

organisations as well who moved into Uttarkashi initially with the intention of providing immediate relief to the earthquake victims. However, they stayed on even after their first task was over to undertake relief measures of a long term. These included construction of tin sheds, community centres, residential houses and college building. Besides this they also imparted training to people of various villages on the construction of earthquake resistant houses and helped in the distribution of building material for the reconstruction of the badly damaged houses. All these details are available in Table 3.4.

Table 3.4 : Participation of NGO's Besides the Six Identified by CAPART in Rehabilitation Work

Sl. No.	Institution	Block	Adopted Villages	Activity Undertaken
1.	INHERE, Almora	Bhatwari	Malla, Pahi, Dwari Sainj, Suwarka, Jakhal, Bhelatiyari and Gorsali	Construction of 12 tin sheds each in villages Pahi and Dwari.
2.	CASA, New Delhi	Bhatwari	Aungi, Dunda	Construction Community Centres.
3.	P.S.I, Dehra Dun	Bhatwari	Bhatwari, Jhunda and Naugaon	Training of villagers in the construction of earthquake resistant houses.
4.	Tata Relief Committee, Jamshedpur	Bhatwari	Ganeshpur	Constructed 207 residential houses at a cost of Rs.1.25 crores

Contd..

Table 3.4 Contd...

Sl. No.	Institution	Block	Adopted Villages	Activity Undertaken
5.	Uttaranchal Uthaan Parishad, Lucknow	Bhatwari	Baina, Lothuru, Maneri Vaman	Constructed 322 tin sheds and distributed them to the homeless
6.	Sewa Bharati, New Delhi	Bhatwari	Pipali Khanda	Construction of 14 tin sheds.
7.	Uttarkashi, Punahnirman Samiti, Uttarkashi	Bhatwari	Manpur (Ginda)	Constructed 40 residential houses for the people
8.	Karuna Social Service Society	Bhatwari	Manpur	Distributed building material to the villagers
9.	The Divine Life Society, Tehri Gahrwal	Dunda	Dikholi	constructed 51 tin-sheds for distribution among needy villagers
10.	Kailash Ashram Rishikesh	Dunda	Payangaon	Construction of residential houses
11.	Aware, Hyderabad	Dunda	Matali	The villagers were distributed 3780 bags of cement, 512 quintals of iron and provided skilled training to 298 persons regarding new construction technology
12.	ADRA	Bhatwari	Jamak, Kamar	Community Centre 19 residential houses were constructed
13.	Baba Kali Kamli, Rishikesh	Dunda	Tikbhaul	Constructed 40 tin-sheds
14.	Swargashram Trust	Bhatwari	Bhatwari	Construction of college building

Source : Uttarkhand Vikas Vibhag, U.P.

We will, in very brief, make a sketch of the six NGO's selected by CAPART for the rehabilitation work, the type of activities they undertook and some of the early problems which some had to face before they could settle down to work. This account is given by the agencies themselves.

THE BHUWANESHWARI MAHILA ASHRAM (BMA) happened to be in the Bhatwari block of Uttarkashi on "Save the Ganga" work when the earthquake struck the area. The organisation pressed into service one of their vehicles to retrieve hurt people. Speedy action was needed to manage the affairs under the trying circumstances and shelter was the need of the hour. The BMA erected temporary shelters using the remnants of destroyed homes, rubble, planks of wood, pipes and donated tarpalins in Didsari village. The assignments chosen by the voluntary organisation with the funds received by them was to:

- provide temporary shelter for people and animals.
- administer and make available health services.
- provide day care and nutrition for children as well as for pregnant mothers and aged.
- provide agricultural needs and seeds.
- provide household equipment replacements.
- address water needs

All this was to be done in 30 villages of Bhatwari block and initially the funds provided were sufficient till March

1992. Since the BMA was successful in achieving its aims, they were able to extend their services further for another four months and in 17 more villages. The organisation extended its activities based on the demands of the people and on the priorities. The priorities varied from one village to another. For example, Kamar village which is predominantly milk producing the BMA built cowsheds. Besides this fodder was also distributed.

For the entire construction programme, local mistris were trained to reconstruct using, as close to possible, techniques of earthquake-proof methods. They were assisted in the task of training masons by the People's Science Institute, Dehra Dun.

The Daycare and Nutrition programme not only provided the much needed nutritional food, but also provided services to dazed mothers and income to local people.

The long term plans of the BMA included;

- (a) establishment of a residential school for 200-300 orphans or poor children to be run in co-ordination with government;
- (b) establishment of a Himalayan Emergency Fund to respond to disasters across the Himalayan belt;
- (c) repairing canals, fields, terraces and walls;

- (d) *promoting small scale industries such as sewing and weaving centres.*

Besides this another long term goal of a rehabilitation programme is to restore a state of balance between the affected people and their environment.

SAMTA : It was one of the organisations to have moves into Uttarkashi soon after the earthquake to provide relief and was among the six to be ultimately identified for providing long term relief and rehabilitation measures. Under the leadership of CAPART they had a series of meetings with the district administration and worked out their priorities based on several long term community programmes identified by them.

The most urgent need was that of providing shelter, SAMTA, therefore decided to provide technical know how to the masons of the area. They prepared the required posters and teaching materials that were required to conduct the training, along with their technical team. The organisation also constructed a few community centres as demonstration units in the area.

The other significant work undertaken was to initiate community action programmes such as tailoring classes for girls and women and Balwadis for the children.

RUCHI (RURAL CENTRE FOR HUMAN INTERESTS) : This organisation is based in Himachal Pradesh and since they had years of experience of working in the hills they came over to Uttarkashi to offer assistance. In the course of their discussion with the local officials and prominent people they met Shri Sunder Lal Nantiyal, an eminent social worker, who requested them to visit Dhauntari area of Dunda block which is about 40 kms from Uttarkashi. They did so and after a survey of the area they decided to concentrate their rehabilitation efforts in four villages viz., Bhatiyara, Saurh, Dakholi and Lodara. All these villages are located at elevations ranging between 1700 - 2000 mts above sea level. The economy is agriculture based and although land is fertile it is inirrigated. Horticulture is undeveloped. Illiteracy is on the high side and health services inadequate. All these factors were in mind of the organisation when it undertook the work in the selected villages.

The first priority was to provide shelter. So as to avoid duplication of efforts in these villages by other agencies the individual house construction work was left to CASA (Church's Auxilliary for Social Action) and Kailash Ashram who were keen to do this work. Ruchi, therefore, arranged a training orientation programme in collaboration with CASA and TARU, to arrange suitable training orientation on suitable construction technologies for masons as well as farmers in bhatiyara. Besides this it took up the

construction work of 3 Community Centres. These would provide shelter to begin with and then provide the people a common platform for community activities.

In collaboration with the office of the Chief Medical Officer, Uttarkashi, Ruchi was also able to cater to the needs of the people through curative as well as preventive services. Health and nutrition education, construction and use of sanitary latrines, chlorination of drinking water sources were the other programmes through which the occurrence of common diseases could be minimised.

Under the DWRCA programme the organisation undertook to establish;

- (a) Weaving units for the training of women in production of shawls, blankets pottis and durries etc. as well as other material by recycling of domestic waste clothes/jute bags/polythene bags etc.
- (b) Sewing centres to serve as training cum production units for women.
- (c) Angora rabbit farming on demonstration basis to promote this activity in this area.
- (d) Pre-education centres for the trainee/working women.

It also established a small scale demonstration unit of fruit and vegetable crops to prove the feasibility of their promotion in this area. It also planned to prepare a cadre

of local people within a span of two years such that they could handle things after Ruchi withdraws from the area.

VIKALP : This organisation had been active for 13-14 years in Saharanpur and it decided to join hands with CAPART in the rehabilitation measures in Uttarkashi. The district administration suggested to them to work in Dunda block. This block also has a high SC/ST population as well and so the voluntary organisation undertook a survey of the area and finally selected seven villages for taking up the rehabilitation work.

In the initial period lots of irregularities had taken place in the preparation of list of beneficiaries. The Patwari and the local influential persons such as Gram Pradhan had played a negative role and so the list contained names of people who did not deserve compensation while genuine persons failed to be listed. The relief material was distributed in an unsystematic manner and all these factors led to a feeling of lack of security as well as greed among the people. For months after the earthquake people residing in villages close to the road could be seen waiting by the road side from morning till the evening in the hope that someone would come and distribute relief material among them.

Vikalp entered the scene at a time when all that people were interested was in free relief. Discussions with these people clearly brought out the fact that at that stage they were not mentally prepared to participate in the

rehabilitation programmes. Vikalp, therefore decided to make a modest beginning by initiating the construction of a community centre each at two villages. The aim was to maintain a close contact with the people in this period so as to win their confidence such that they become active participants in the other activities which would be taken up soon.

The activities which could be taken up effectively in the area are commercial farming, cultivation of those crops which need less of irrigation, horticulture and dairy development. Since sheep are reared in the area there is scope for a woollen industry on a cottage industry level. Where blankets and woollen garments can be produced. The forests can similarly be tapped for their abundance in medical plants.

DISHA - This is yet another non-governmental organisation, with its base at Saharanpur, to move into Uttarkashi and undertake long term rehabilitation programmes which included activities such as construction of community centres and model houses, organising the beneficiaries of the anti-poverty programmes, conducting economic as well as other developmental activities. Disha also selected Dunda block as their area of activity and further narrowed down their focus on a total of seven villages - Udalka, Dadmali, Majaf, Dunda, Danda, Nakuri and Thati. By December 1992 the Community Centres at Udalka and Dunda had been completed while those at Nakuri, Danda and Majaf were completed in the following year.

In each of the seven adopted villages people were motivated for experimental horticulture plantation. The organisation aims to develop their own horticulture nurseries in every village. They will train local people such that these nurseries can be developed and maintained. There is also the provision of sending the local people to other areas where horticulture has been developed. This will give the local people the much needed exposure. The project is a long term one and will be completed over a period of 5-7 years and will be a phased operation. Similarly drinking water supply and irrigation projects have also been undertaken for each village. Some have been completed as well.

The organisation set up a training centre for women under the Udalka - Sewing tailoring project to train the women of the villages. It also set up a training programme for the women in knitting. The trained women will be provided subsidised loans under IRDP. The other programmes undertaken were Balwadi, adult literacy, health and nutrition services. DISHA wishes to remain active in Uttarkashi for 7-10 years.

SUTRA : Just as Saharanpur district was active by the way of two NGO's being active in Uttarkashi, Himachal Pradesh too had a representation of two NGO's working in co-ordination with CAPART. Sutra decided to utilise its experience of working for the upliftment of women in their own state for furthering the cause of women in Uttarkashi as well. Its aim was to bring about a change in the existing status of women.

The men are by and large opposed to the idea of granting a higher status to the women. Therefore, the need was to bring about a change in the existing power structure of the family. Sutra selected interior villages namely Kamad, Dhandi, Kumarkot and Brahmpuri primarily because they were far away from the district headquarter and also away from the national highway. In fact the jungles of village Kamad are the last jungles of India.

To begin with, everyone in the villages presumed that their agency was providing one time relief which would benefit the individuals concerned. In fact they were both disappointed and frustrated on finding out that this was not the case. The efforts of Sutra to approach the women folk through the Pradhans and other influential persons were thwarted and so they were left with the sole option of approaching them directly. It took them close to six months to be able to open a meaningful dialogue with the women folk since they were not allowed to talk freely with the Sutra activists. In fact, whenever Mahila Mandal meetings were organised, the Pradhan etc. would participate in them and answer the questions themselves rather than allow the women to do so towards whom the questions had actually been directed. However, once the ice was broken, the women came forward freely to discuss the various problems which they face in their daily activities.

The main activities undertaken by Sutra were;

- (a) the construction of two Community Centres.
- (b) to assist people with respect to the new technology which would be useful in the construction of earthquake resistant houses.
- (c) to interact with the women with a view to understand their problems. This would be helpful in generating a feeling of awareness among them so as to organise them in such a way that a change may be brought about in the lives and status.
- (d) to train women for various economic activities such as weaving.

So far we have talked of the type of role played by CAPART and of the six NGO's with whose co-ordination the rehabilitation work was taken up in the district of Uttarkashi on a non-governmental level. We will now talk of the NGO's activities in relation to the five villages selected by us for detailed survey. We will begin by mentioning the names of all those agencies who were involved in these villages whether for short term or long term relief operations. A total of nine agencies are found to have been active in one village or the other. The Bhuwaneshwari Mahila Ashram, ADRA and the Vishwa Hindu Parishad activists were found to be busy in three out of the five villages selected by us while the Geeta Press Gorakhpur people undertook relief work in two villages. All the other agencies were active in

only one village. Likewise when we look at organisational work from the view point of the respective village. We find that Kamar had the services of as many as four agencies whereas three organisations were active in each of the remaining four villages selected by us. These details are provided in a tabular form in Table 3.5.

Table 3.5 : NGO's Active After the Earthquake in the Selected Villages

VILLAGE	Geeta Press	B.M.A. Ashram	Kailash ADRA	V.H.P.	Shiva-nand Ashram	Ram Krishna Mission	Red Cross	Tata Relief Project
DIDSART	-	/	-	/	/	-	-	-
GANESHPUR	-	-	-	-	/	/	-	/
JAMAK	/	-	-	/	/	-	-	-
KAMAR	/	/	/	/	-	-	-	-
NETALA	-	/	-	-	-	-	/	-
TOTAL	2	3	1	3	3	1	1	1

It has already been mentioned earlier that the government offered compensation to the people to assist them in the reconstruction of their destructed houses. Besides this even the NGO's undertook the task of construction of houses besides undertaking other rehabilitation work in the villages to either construction of houses or offering help related to new technology. This was the most important aspect of the rehabilitation work since the earthquake had caused a very heavy damage to the houses and in the extreme climate of the hills housing is the most urgent requirement of the population.

Table 3.6 : Details of Assistance Provided by NGO's with respect to Housing in the Selected villages.

Name of Village	Sample Size of each village	House-holds receiving compensation from the Govt.	No. of House-holds who received training regarding housing	House-holds who received fully constructed houses	House-holds which received semi-constructed houses	Name of the N.G.O's
DIDSARI	37	37	13	-	-	TARU, BMA
GANESHPUR	90	90	-	90	-	Tata Relief Project Shivanand Ashram
JAMAK	40	39	6	-	26	TARU, ADRA, VHP
KAMAR	35	35	6	-	-	TARU, VHP Geeta Press
NETALA	80	75	30	-	42	Ram Krishna Mission
TOTAL	282	276	55	90	68	

The total sample of households surveyed by us from the five selected villages was 282. However, one household in Jamak and five from Netala did not receive any compensation from the government for the reconstruction of their damaged houses. In each village the NGO's also followed the same list for identification of beneficiaries as the one prepared by the government and so these six households did not receive any assistance from the NGO's either.

In the case of Ganeshpur the Tata Relief Project had undertaken the full responsibility of providing a fully constructed residence to every household. Accordingly, our entire sample from the village appears as a beneficiary of this scheme. Since every household was being provided a residence, no NGO felt the need to give a demonstration to the villagers on the technology related to earthquake resistant construction.

In Didsari, Jamak and Kamar TARU provided the training to some persons in connection with appropriate construction technology suited to this earthquake prone area. Netala was the one village from among our sample villages where this type of training was provided by the engineers of the P.W.D.

While Ganeshpur was lucky to have the services of Tatas, Jamak and Netala also had NGO's who had undertaken the responsibility of house construction. In the former village this task was handled by ADRA as well as VHP. They together

undertook 64 constructions (32 by each organisation), of these 26 were allotted to the households covered by us. Similarly Netala was adopted by the Ram Krishna Mission for this purpose and of the 62 houses constructed by them as many as 42 households from our sample were the beneficiaries of the scheme. However, in both these villages these NGO's offered only semi-constructed houses and it was left to the beneficiaries to complete them on their own.

The typical houses of the hills consist of space on the ground floor for keeping their animals and storing firewood and fodder etc. while people themselves live on the first floor. The people were therefore not satisfied with the type of houses which was provided to them by the Tata Relief team despite the fact that they were fully constructed houses. This was primarily because these houses did not have provision for keeping the animals. The people also were not satisfied with the overall accomodation (two small sized rooms) provided in each house. Above all they have complained that the tin roofs are not suited because they do not provide adequate protection from the cold and in the monsoon season these roofs make unnecessary noise. It, therefore, follows that when people were dissatisfied with fully constructed houses they could not be expected to be happy with houses handed over to them in semi-finished conditions. These too, according to the people, are too small to meet their requirements and the finishing work calls for investments of around Rs.20-25 thousand. The complaint

regarding tin roofing is on the same ground as in the case of Ganeshpur.

The various NGO's provided immediate relief as well besides their involvement in the long term rehabilitation measures. In Didsari for example the Bhuwaneshwari Mahila Ashram provided first aid, temporary shelter, food and fodder soon after the earthquake. They also provided 9 tin sheets to each family as well as a cash grant of Rs.1000 per family. They also constructed a community centre in the village and constructed one house for a widow who had no relatives to look after her.

The VHP also provided immediate relief in this village and announced that they would adopt the village for house construction. They set up their tents and dissuaded other voluntary organisations from taking up long term rehabilitation projects in Didsari on the pretext that they would themselves take up this work. However, when for over a month they did nothing, the people requested ADRA to take over the work of rehabilitation. This led to a conflict between VHP and ADRA and ultimately no organisation adopted Didsari for house construction.

In Ganeshpur the situation was clear because of the role being played by Tata Relief Project. However the Shivanand Ashram activists provided immediate relief to the earthquake victims. They rescued those who were trapped in the debris, provided them food, clothing and a tarpolin of 40 ft. length

to each family for making temporary shelters. Even the VHP was engaged in the task of food distribution for a few days.

In the case of Jamak the team of activists from Geeta Press, Gorakhpur distributed 8 tin sheets and 5 bags of cement to each family for putting up a temporary shelter. They also supplied one quilt per family along with sugar and tea etc. The work of food distribution was handled by ADRA.

The Geeta Press team provided 8 tin sheets to each family in Kamar. They also provided tea and sugar to each family. The Bhuwaneshwari Mahila Ashram on the other hand distributed cash worth Rs.1500 to 40 selected families for the construction of cattle sheds in the village. They also distributed potato and tomato seeds all over the village. They also distributed free medicines for the animals for a period of one year.

Netala was served by the Ram Krishna Mission. Besides the construction of houses they provided each family with 10 Kgs each of rice and wheat, one tarpolin, five blankets and medicines as well as fodder for the animals. Besides this, they gave cash relief of Rs.100 per family for a period of three months. The Team of BMA was also active in Netala. They provided medical facilities and later set up a training and weaving, production of carpets, sweaters etc.

The views of the sample households were collected through our interview schedule related to the long term

rehabilitation measures taken up by the NGO's, their assessment of the work done by the NGO's and their opinion whether these NGO's provide better services than the governmental machinery. These details are being discussed on the lines of information provided in Table 3.7, 3.8 and 3.9.

Table 3.7 : Role Played by the NGO's in Long Term Rehabilitation Programmes

VILLAGE	Total Sample	Whether help was provided by NGO's		If yes, what was the type of help		
		Yes	No	Provided fully or partially constructed houses	Provided training related to house construction	Provided vocational training
DTDSARI	37	13	24	-	13	-
GANESHPUR	90	90	-	90	-	-
JAMAK	40	32	8	26	6	-
KAMAR	35	6	29	-	6	-
NETALA	80	50	30	42	-	8
TOTAL	282	191	91	158	25	8

The response of the people with respect to long term rehabilitation measures is confined to those households who have availed any such facility provided by one non-governmental organisation or the other. Therefore a response "No" indicates the number of households who did not receive

the assistance. On the whole, therefore, 158 households received fully or partially constructed houses whereas another 25 families were beneficiaries of the training camps held by TARU to provide information related to earthquake resistant housing technology. Therefore, almost two-thirds of the sample households were facilitated in one way or the other with respect to their housing requirements. Besides this, the training centre of Natala set up by the B.M.A. to train women in spinning and weaving helped another eight households. (Table 3.7).

Looking at the people's assessment of the work, carried out by the NGO's (both short term and long term relief work) the bulk of them feel that it was of a good quality (58.16 per cent) whereas another 15.25 per cent have rated their efforts as excellent. In fact only less than 10 per cent respondents, from Didsari Jamak, and Netala, were not satisfied with the functioning of the NGO's (Table 3.8). The reasons for the dissatisfaction by the people of Didsari were primarily based on their anger over the dispute between VHP and ADRA which deprived the villagers the possibility of obtaining constructed residences. In Jamak the resentment is on the ground that the allotment of houses to beneficiaries was not carried out on the basis of a rational policy. Instead, the selection was arbitrary and needy persons were left out. Netala is one of the villages on the road side and so the village was flooded by voluntary organisations who

distributed relief materials. However, the dissatisfaction of few respondents lies on the ground that care was not taken to ensure that everyone received aid. In some cases all the family members of a particular family received assistance while in other cases the entire family was left out. Thus they feel that the relief work should have been carried out in a systematic manner. This negligence was partly caused by local politics as well.

Table 3.8 : People's Assessment of The Role of NGO's During The Post-Earthquake Period

NAME OF VILLAGE	Excellent	Good	Fair	Not Satisfactory	Total
DIDSART	2	19	9	7	37
GANESHPUR	31	44	15	-	90
JAMAK	-	22	9	9	40
KAMAR	4	24	7	-	35
NETALA	6	55	9	10	80
TOTAL	43 (15.25)	164 (58.16)	49 (17.37)	26 (9.22)	282 (100.00)

Table 3.9 : A Comparative Assessment of the NGO's with the Government

VILLAGE	Total Sample	Resopondents NGO's do be- tter work than Govt.		If yes, then in what way?			
		Yes	No	Provided immediate relief with greater efficiency	Possess the abi- lity to assess the pro- blems of the people	Ability to han- dle long term relief measures better than govern- ment	NGO's work with greater sense of de- dica- tion & sincer- ity
DIDSARI	37	26	11	15	15	6	14
GANESHPUR	90	51	39	48	20	35	11
JAMAK	40	16	24	10	15	16	14
KAMAR	35	30	5	27	17	6	17
NETALA	80	57	23	43	38	39	27
TOTAL	282	180	102	143	105	102	83
	(100.00)	(63.83)	(36.17)				

Table 3.9 clearly brings out the fact that in the views of the respondents the NGO's have the capability to work with greater efficiency as compared to the existing government machinery. Nearly 64 per cent respondents have responded in favour of the NGO's while only about one-third feel that the government functioning is better than those of the NGO's. There are multiple responses as to why they feel that NGO's can do a better job. Some have expressed this opinion based on the efficiency shown by these organisations in providing immediate or long term relief. Others feel that the NGO's are better equipped to understand and handle the problems of the local people since they stay with them and mix with them easily. This, therefore, results in the deduction that by and large the NGO's work with a greater sense of dedication and sincerity.

The different NGO's were found to be equally active in our three observation villages as well. In the case of Maneri the Bhuwaneshwari Mahila Ashram (BMA) moved in very quickly and provided immediate relief by way of distribution of food to the people and fodder for the animals. They also gave medical aid for the injured persons. The Vishwa Hindu Parishad (VHP) people also made their presence felt by taking up the construction of 107 residences. These were handed over to the local people in a semi-finished state and those receiving them were expected to complete them on their own.

The VHP also set up a training centre for women in the village where ladies are being taught tailoring and embroidery work. Those learning tailoring are also being provided part time employment. These females make children's school bags and the centre pays them a fixed amount as remuneration per bag. Besides this TARU set up a four day training camp in which the village Pradhan and the local masons were provided training in the construction of earthquake resistant houses.

Both the BMA and VHP were active in Baina as well. The BMA distributed fodder and medical help for the animals and distributed medicines among the injured people. Besides this they assisted the families in erecting temporary shelters by giving each family tarpaulins and polythene sheets. The VHP on the other hand distributed 5 kgs each of rice, wheat and pulses to each family. Just as they had done in Maneri they constructed 107 structures here as well and handed them over to those whose houses had been completely damaged. Here too only semi-finished structures were made.

In Syaba, however, only the BMA did the work of providing immediate relief by way of providing medicines, tarpauline and polythene sheets to each family in the village.

In the course of our discussion in these three observation villages it became quite clear that the local

population from all these villages were satisfied and impressed with the performance of the NGO's. They felt that the NGO's had played a more active role than the government machinery. In Baina, for instance, the people complained that they received veterinary services after a lapse of almost three weeks and that their animals would have suffered unduly had the BMA activists not provided timely medical help to their injured animals.

The analysis carried out so far clearly brings out the fact that the NGO's have played a significant role in the execution of various programmes related to relief and rehabilitation measures in the quake affected areas of Uttarkashi and that it is possible to take up a sustained effort even in unfamiliar areas with the assistance of these organisations. The proof of their ability was evident to us in the course of our visit to the various villages for survey work and was also evident by the appreciation made by the people as well as the various government officials at all levels. Our discussion with the people and civil servants brought to light the fact that these non-governmental organisations have certain limitations on one hand whereas they have some basic advantages when they are compared to the working of the government departments. It will be worthwhile to shed some light on both these aspects.

(a) Shortcomings of NGO's

- (i) It is generally found that not all NGO's are willing to take up developmental activities in the far flung and remote areas especially if they are relatively inaccessible. The evidence of which was cited by the people by way of information that if we simply look back on the task of providing immediate relief to the Uttarkashi earthquake victims, the NGO's in most cases, put up road side camps in the easily accessible villages. The people from the nearby but relatively inaccessible villages were asked to come down to their camp office to pick up their relief materials.
- (ii) These NGO's are normally small organisations and area, therefore, incapable of doing effective surveys on a large scale for say the identification of beneficiaries in a given area.
- (iii) In many cases the NGO's stake claims of being capable of handling work in which they actually have no competence. Thus if they are vested the responsibility they are a cause of disappointment to the local people and such incompetence also results in wastage of funds which could have been much better utilised.

- (iv) In certain cases these organisations are disadvantaged by lack of funds which in turn restricts their ability to recruit sufficient staff. Moreover, at times they are unable to carry out a programme effectively in the face of the difficulties offered by the terrain. For example, if an NGO does not have people with working experience in the hills they will find it difficult to commute from one place to another on foot and even find the climatic conditions adverse.
- (v) At times the clash of interests of two or more NGO's wanting to work in the same area may lead to a state of confusion and ultimately the local people might turn out to be the losers. Didsari village provided the example of such a situation where both ADRA and the VHP wanted to adopt this village. Ultimately neither of them did anything and no housing scheme was taken up as a consequence of this tussle.
- (vi) The most significant of criticisms against the NGO's is that related to accountability. It is felt that while in the case of state government employees there is a pre-determined hierarchy according to which accountability is fixed. And above them is the minister who is also accountable to the public. However no such accountability is found in the case of the NGO's.

(b) Strong points

- (i) By the very name itself it is apparent that these organisations are voluntary and so are set up only because a set of dedicated persons are interested in the burning problems of a given area and plan to do something concrete for their redressal.
- (ii) All such organisations are grassroot organisations and as they set up their office within the area of their activity they work in close harmony with the local people.
- (iii) Since they are located within the village and work in close co-ordination with the villager community, they can understand and analyse their problems with greater ease and afford daily supervision of the projects undertaken.
- (iv) The success of rural based programmes depends, to a considerable extent, on the active participation of the people. This can be achieved much easily by the voluntary organisations by virtue of their closeness to the local people.
- (v) The voluntary organisations invariably operate in a limited but well defined area. Consequently, it becomes that much easy for them to keep a proper control over their activities.

- (vi) By virtue of the fact that the activists of any voluntary organisation are people interested in a particular activity and also in undertaking the work concerned in the region of their choice, they take greater interest in their activities. As a result the degree of efficiency attained can be quite high and they are able to conduct their activities smoothly.

In view of what has been said with respect to the functioning of the NGO's and the role which they have been playing over the years, they can be vested with greater responsibilities especially in the event of a natural calamity. However, certain precautions need to be kept in mind to ensure the success of all programmes and projects which are carried out by non-governmental organisations.

- (a) It is mandatory that an agency such as CAPART should be entrusted the responsibility of co-ordinating the work of the NGO's. These NGO's should be made fully accountable to CAPART such that a close watch can be kept on their activities.
- (b) The co-ordinating agency should devise adequate measures for monitoring the activities of the NGO's. All projects should be time bound and regular progress reports should be prepared by the staff of the co-ordinating agency on the basis of personal supervision rather than by asking the NGO's to do so.

- (c) A close check on the utilisation of the finances also needs to be ensured such that the funds are actually utilised for the purpose for which they were disbursed.
- (d) A list of dedicated NGO's should be prepared based on their past performance. From this list those NGO's should be identified who are willing to undertake activities in a disaster struck area. They may be asked to specify their preference regarding the type of activities which they wish to undertake and the region in which they will most comfortably be able to work.
- (e) Specialised training may be imparted to those desirous of attaining the same - for example they may be trained as far as construction of earthquake resistant houses are concerned.
- (f) Once the final list of NGO's is ready, it will be easy to undertake any relief or rehabilitation work even at a short notice. The Uttarkashi experience indicated that it took CAPART around 3 months to identify the 6 NGO's and then the NGO's took sometime before they were in a position to commence the activities entrusted to them.
- (g) Above all the importance of the government machinery has to be appreciated despite the efficiency of the NGO's. The government departments will continue to play a vital role in all activities whether under normal

circumstances or in the event of a natural calamity. There is, therefore, an urgent need to have a close co-ordination between the rehabilitation work undertaken by the government machinery as well as the NGO's to avoid all possible misunderstandings as well as duplication of work.

CHAPTER IV

ANALYSIS OF THE IMPACT OF THE EARTHQUAKE ON THE RESPONDENTS OF THE SELECTED VILLAGES

In the three preceding chapters we have basically analysed some aspects of the earthquake with the help of secondary information, the profile of the selected villages as well as the role played by the NGO's in providing rehabilitation measures. In Chapter III, however, we did utilise some primary information, collected through our structured questionnaire, related to the work done by the different NGO's at the village level and the views expressed by the respondents pertaining to their assessment of the relief and rehabilitation operations carried out by the different voluntary organisations.

In this chapter our attention will be focused on the analysis of the primary information we have collected from our five selected villages for the purpose of our study. We will be making an attempt to look at the following aspects:

- (a) *general characteristics of the respondents;*
- (b) *demographic structure and income pattern of the households;*
- (c) *impact of the earthquake on the sample households;*
- (d) *type and extent of relief measures provided to the people after the earthquake; and*
- (e) *to find out whether the relief measures have succeeded in putting the people back to at least their pre-disaster level of socio-economic status.*

As has already been specified earlier, we covered a total sample of 282 households from the five villages selected from the Bhatwari block of Uttarkashi district and that these were amongst the worst affected villages where the earthquake had caused widespread and extensive damage.

GENERAL CHARACTERISTICS OF THE RESPONDENTS

The respondents were found concentrated in the age group of 25-45 years. Taking all the five villages together a total of 50 per cent respondents fell in this age group alone. The variation between the villages in this age group ranged between a low of 37.83 per cent in Didsari to a high of 60 per cent in Jamak. The next age group with a reasonably high concentration was the 45-60 year age group having around 30 per cent respondents on the whole. Less than 4 per cent of the total respondents were below 25 years

of age. The overall average age of all the respondents taken together worked out to be 43.25 years. There were only marginal variations between the villages (Table 4.1).

Table 4.1 : Villagewise distribution of Respondents by Age

VILLAGE	(Age in years)				Total Respondents	Average Age
	15-25	25-45	45-60	60+		
DTDSARI	4	14	14	5	37	42.19
GANESHPUR	3	48	23	16	90	44.67
JAMAK	1	24	11	4	40	41.85
KAMAR	2	14	15	4	35	39.89
NETALA	1	41	24	14	80	44.31
TOTAL	11 (3.90)	141 (50.00)	87 (30.85)	43 (15.25)	282 (100.00)	43.25

N.B : *Figures in brackets are percentages to total.*

The overall percentage of illiterate respondents was just less than one-fourth while another 15 per cent were literates without schooling. Therefore almost 40 per cent of the respondents did not have much of an educational background. The respondents were almost evenly divided among those having primary education (26.60 per cent). These two categories, therefore, jointly accounted for around 55 per cent of our sample. The rest were those who were well educated with a qualification of graduation or above but their number was rather low (6.38 per cent). Among the five

villages Netala had the highest percentage of respondents with an education of at least primary level (70 per cent) while it was lowest in the case of Jamak (47.5 per cent). These details can be seen in Table 4.2.

Table 4.2 : Educational Level of Respondents

VILLAGE	Illiterate	Literate	Primary	Secondary	Graduate and Above	Total
DIDSARI	9	6	10	11	1	37
GANESHPUR	26	9	23	23	9	90
JAMAK	10	11	7	12	-	40
KAMAR	2	11	8	12	2	35
NETALA	18	6	27	23	6	80
TOTAL	65 (23.05)	43 (15.25)	75 (26.60)	81 (28.72)	18 (6.38)	282 (100.00)

N.B : *Figures in brackets are percentages to total*

In our sample the respondents were predominantly males and constituted nearly 94 per cent of the total respondents. Over two-thirds of them belonged to the higher caste while the percentage of SC/ST respondents was around 30 per cent. The village with the highest SC/ST population was Ganeshpur (around 42 per cent). While the percentage was lowest in the case of Kamar (4.72 per cent) (Table 4.3).

Table 4.3 : Classification of Respondents by Sex, Caste and Marital Status

VILLAGE	Total Res- pon- dents	SEX		CASTE		MARITAL STATUS		
		Male	Female	General	SC/ST	Marri- ed	Un- ma- rri- ed	Widow/ widow- er
DADSARI	37	35	2	23	14	30	1	6
GANESHPUR	90	84	6	52	38	77	2	11
JAMAK	40	37	3	32	8	34	-	6
KAMAR	35	33	2	33	2	33	1	1
NETALA	80	75	5	55	25	68	1	11
TOTAL	282	264	18	195	87	242	5	35
	(100.0)	(93.62)	(6.38)	(69.15)	(30.85)	(85.82)	(1.77)	(12.41)

N.B. : *Figures in brackets are percentages to total respondents*

If we look at the distribution of the respondents from the point of view of their primary occupation we will find that almost 60 per cent have agriculture and animal husbandry as their main activity in all the five village taken together. This percentage is as high as 97 per cent in the case of Kamar while Didsari is a close second with a percentage of almost 86.5 per cent. Netala was the village with the lowest percentage (30 per cent) of the respondents having agriculture and animal husbandry as their primary occupation. The only other activity of some importance from the point of view of primary occupation was services which

and an overall share of around 16 per cent. In Netala over one-fourth of the total respondents were mainly dependent on the service sector. All other activities such as agricultural or non-agricultural labour, handicrafts and self employment etc. had shares ranging between 1-9 per cent only. (Table 4.4).

Table 4.4 : Classification of Respondents According to Primary Occupation

VILLAGE	Agri- cul- ture/ Animal Husba- ndry	Agri- cul- ture labour	Non- Agri- cul- ture labour	Handi- craft	Ser- vice	Self Emp- loy- ment	Others	Total No. of respon- dent
DTIDSARI	32		2	-	-	1	2	37
GANESHPUR	47		12	5	17	2	7	90
JAMAK	27		2	-	6	2	3	40
KAMAR	34			-	-	1	-	35
NATALA	28	3	10	1	22	10	6	80
TOTAL	168 (59.57)	3 (1.06)	26 (9.22)	6 (2.13)	45 (15.96)	16 (5.67)	18 (6.38)	282 (100.00)

N.B : Figures in brackets are percentages to total

Almost 41.5 per cent of the respondents did not have any secondary occupation. Kamar led the list of villages with people having no secondary occupation (88.57 per cent) while this percentage was lowest in the case of Netala (22.50 per cent). Agriculture was the most important secondary occupation covering around 37.5 per cent respondents and the only other activity with relatively higher number of people was agricultural labour (12.25 per cent). (Table 4.5). This, therefore, clearly brings out the heavy dependence on agriculture in all the five villages selected by us for the study.

Table 4.5 : Classification of Respondents According to Secondary Occupation

VILLAGE	Agri- cul- ture/ Animal Husba- ndry	Agri- cul- ture Labour	Non- Agri- cul- ture Labour	Handi- craft	Service	Self Emp- loy- ment	Others	No Secun- dary occu- pation	Total No. of respon- dent
DIDSARI	5	-	6	-	-	-	2	24	37
GANESHPUR	40	-	18	-	-	3	-	29	90
JAMAR	13	-	12	-	-	-	-	15	40
KAMAR	1	-	1	-	-	1	1	31	35
NETALA	47	6	6	-	-	-	3	18	80
TOTAL	106 (37.58)	6 (2.13)	43 (12.25)	-	-	4 (1.42)	6 (2.13)	117 (41.49)	282 (100.0)

N.B : Figures in brackets are percentages to total

Despite the fact that agriculture is the main activity of the people, the land holdings are rather small. The topography of the hills adds its own limitations which results in small sized and terraced fields. From among our respondents only five of them (1.77 per cent) were found to be landless. All the others had some land at least. On the other hand, only one individual had agricultural land in excess of 5 acres. Land holdings were found highly concentrated in the size group of less than one acre (62.06 per cent). The next higher group comprising of holdings between 1 and 2.5 acres accounted for slightly over one-fourth of our total sample. On the whole, therefore, over 90 per cent of our total respondents had a landholding size of below 2.5 acres. The maximum concentration of land holdings in the less than one acre size group was found in Jamak (80.00 per cent) while this percentage was the lowest in the case of Kamar (28.57 per cent). The overall average land holding size worked out to 0.90 acres in the five villages taken together. At the level of the individual villages Kamar had the highest average land holding of 1.83 acres while in Ganeshpur the average land holding size was found to be the lowest (0.57 acres) (Table 4.6). This goes on to highlight the fact that although agriculture is the main activity of these villages, the majority of the cultivators face hardships in cultivation as a result of difficult terrain, inadequate irrigation and small size of land holdings etc. All these factors adversely affect the

productivity of the land. In a majority of cases, therefore, agriculture is reduced to a subsistence activity and the cultivators are not in a position to generate enough of agricultural surplus to make the activity a profitable one.

Table : 4.6 : Distribution of Respondents According to Land Holding Size

VILLAGE	land-less	Less than 1 acre	1-2.5	2.5-5.0	5.0+	Average size of land-holding	Total No. of respondents
DIDSARI	0	18	14	4	1	1.22	37
GANESHPUR	3	71	16	-	-	0.57	90
JAMAK	0	32	6	2	-	0.77	40
KAMAR	0	10	17	8	-	1.83	35
NETALA	2	44	28	6	-	0.77	80
TOTAL	5	175	81	20	1	0.90	282
	(1.77)	(62.06)	(28.72)	(7.09)	(0.35)		(100.00)

N.B. Figures in brackets indicate percentages to the total.

DEMOGRAPHIC STRUCTURE AND INCOME PATTERN OF THE HOUSEHOLDS

In the 282 households which were surveyed by us in the five selected villages, there was a total population of 1207 persons. Of these, around 14 per cent were children below five years of age. Besides them almost another one-fourth were in the age group of 5-15 years. Yet another one-fourth

Table 4.7 : Demographic Structure of the households
Including the Respondents)

VILLAGE	Age Group (Years)						Total	Avg. size of house- hold	Marital Status		
	Below 5	5-15	15-25	25-45	45-60	60+			marr- ied	un- marri- ed	widow/ widower
DIDSARI	20	40	33	34	21	8	156	4.22	66	79	11
GANESHPUR	50	90	76	96	45	29	386	4.29	188	182	16
JAMAK	26	48	32	47	16	8	177	4.42	82	88	7
KAMAR	24	36	30	31	23	7	151	4.31	78	68	5
NETALA	52	75	59	85	43	23	337	4.21	148	170	19
TOTAL	172	289	230	293	148	75	1207	4.28	562	567	58
	(14.25)	(23.94)	(19.06)	(24.27)	(12.26)	(6.21)	(100.00)				

N.B. : Figures in brackets are percentages to the total

fell in the age group of 25-45 years. Those in the higher age group of above 60 years constituted only around 6 per cent of the total population. The remaining population were found in the two age groups viz., 15-25 years and 45-60 years. As far as the age groupwise distribution of the population is concerned, there was little difference between the five selected villages. On the whole the overall average size of the household worked out to be 4.28 and once again there was little variation in the average household size of the different villages (Table 4.7).

If we look at the educational level of the population we find that it comprises of around 42 per cent illiterate persons. However, we must look at these figures in the light of the fact that this population has around 16 per cent children. The share of illiterates to the total population was the lowest in the case of Kamar (39 per cent). There are another 14 per cent persons who are literate without any formal schooling. This leaves us with around 44 per cent persons who have had formal school education. The maximum number of literates are seen to have education upto the secondary level (21.62 per cent) followed by those who have education only upto the primary level (19.06 per cent). There are those as well who are well educated and have a university degree. However, their percentage is rather low (3 per cent). Table 4.8.

Table 4.8 : Educational Level and work Status of Household
Including Respondents

VILLAGE	Educational Level						Work Status						Total
	Illi- terate	Lite- rate	Pri- mary	Secon- dary	Gra- duate and above	Total	Child	Student	wor- king	Unem- ployed	House- wife	Pen- sion/ Reti- red	
DIDSARI	66	24	24	40	2	156	22	41	90	-	2	1	156
GANESHPUR	161	42	74	91	18	386	55	110	204	2	9	6	386
JAMAK	77	26	37	35	2	177	28	54	93	1	1	-	177
KAMAR	59	35	23	31	3	151	30	32	83	-	5	1	151
NETALA	142	46	72	64	13	337	61	97	177	2	-	-	337
TOTAL	505	173	230	261	38	1207	196	334	647	5	17	8	1207
	(41.84)	(14.33)	(19.06)	(21.62)	(3.15)	(100.00)	(16.24)	(27.67)	(53.60)	(0.41)	(1.41)	(0.66)	(100.00)

N.B. Figures in brackets are percentages to the total

When we turn our attention towards the work status of the population we observe that over and above the children which constitutes 16 per cent of the total, another 27.67 per cent fall in the category of students. It may be recalled that in Table 4.7 we had indicated that there are 172 children below five years where as Table 4.8 indicates that there are 196 children. This is so because while 24 of them have attained the age of 5 years, their parents have not yet started sending them to school. A very small percentage constitutes of unemployed persons (0.41 per cent), housewife (1.41 per cent) and retired people (0.66 per cent), housewife (1.41 per cent) and retired people (0.66 per cent). We are, therefore, left with an overall figure of 53.60 per cent of the total population which constitutes of workers. The share of workers to total population was almost identical in the case of Ganeshpur, Jamak and Netala - around 52.5 per cent each, whereas it was highest in the case of Didsari (57.69 per cent).

It had been brought out by from Table 4.8 that taking all our sample households together, there were a total of 647 workers. The detailed break up of these workers on the basis of occupational classification is being given in Table 4.9. A little over three-fourths of these workers are engaged in the agriculture and animal husbandry sector. This, therefore, implies that less than one-fourths of these workers are engaged in the agriculture and animal husbandry sector. This, therefore, implies that less than one-fourth

workers are engaged in the remaining activities. Among them services is the most important by way of the number engaged here. However, the share of this sector is less than 10 per cent. These villages have nothing by way of handicrafts. In fact, the only village from where we could obtain a few people engaged in the handicrafts was Ganeshpur where these people are engaged in weaving. There was one family in Netala as well which was weaving woollen yarn. When we look at these villages at an individual level we find that the least dependence on agriculture and allied activities is in Netala since only around two-thirds of the total workers are

Table 4.9 : Distribution of Household Workers By Occupation Including Respondents

VILLAGE	Agri- culture and Animal Hus- bandry	Agri- cul- ture la- bour	Non- agri- cul- ture la- bour	Handi- craft	Ser- vice	Self- em- plo- yed	Others	Total
DIDSARI	84	-	2	-	1	1	2	90
GANESHPUR	144	1	15	7	25	5	7	204
JAMAK	78	-	3	-	7	2	3	93
KAMAR	75	2	1	-	2	1	2	83
NETALA	117	4	10	1	28	11	6	177
TOTAL	498 (76.97)	7 (1.08)	31 (4.79)	8 (1.24)	63 (9.74)	20 (3.09)	20 (3.09)	647 (100.0)

N.B. : Figures in brackets are percentages to the total.

engged in this sector. Even in Ganeshpur this share is much below the overall average (70 per cent approx). In each of these villages the share of workers engaged in the service sector is slightly higher than the combined average of the five villages.

Having had a look at the occupational structure of our sample households we will now make an attempt to look into the annual levels of earnings of these households as well as earnings from different sources. We will, therefore, look at the household incomes from different angles so as to have a precise picture of the earnings of the people in our selected villages.

In the first case we will look at the frequency distribution of households according to the levels of income of these households. The data pertaining to this aspect is depicted in Table 4.10. In all the villages taken together we observe that the concentration of the households is found to be highest in the income range between Rs.5,000 - 10,000 and close to one-thirds of the total households belong to this particular income group. After this there are two income groups which have almost a similar share of households. These are the income groups which have a range of Rs.15 to 25 thousand and Rs.10 to 15 thousand and their share of the households is 20.57 and 19.50 per cent respectively.

Table 4.10 : Income wise Distribution of Households

VILLAGE	Income Group						Total	Average household income (yearly)
	Below-5000	5000-10000	10000-15000	15000-25000	25000-40000	40000+		
DIDSARI	4	18	7	6	2	-	37	9691
GANESHPUR	17	29	17	15	7	5	90	14966
JAMAK	5	15	9	6	5	-	40	11425
KAMAR	4	8	9	13	1	-	35	12766
NETALA	17	23	13	18	8	1	80	15185
TOTAL	47	93	55	58	23	6	282	13561
	(16.67)	(32.98)	(19.50)	(20.57)	(8.15)	(2.13)	(100.00)	

N.B. : *Figures in brackets are percentages to the total.*

On the whole the average income per household works out to be Rs.13,561. However, when we look at these villages individually, there are variations between them. The lowest income per household was found in village Didsari (Rs.9691) and here almost 60 per cent of the total households have incomes of below Rs.10,000 each. On the other hand Netala was the village which was ranked first in terms of per household income with a figure of Rs.15,185. Ganeshpur was a very close second with a per household income of Rs.14,966. In the case of both these villages each had around 10 per

cent households which had incomes in excess of Rs.25,000 thereby giving the boost to average household income.

We have just looked into the various income brackets to which our sample households belong to as well as the average income of each household in relation to the five villages individually as well as all of them taken together. We will now, with the help of Table 4.11, look at the percentage contribution of the various sectors in the incomes of the households in these villages. It is interesting to note that despite the fact that there is such a heavy dependence on agriculture from the point of view of workers engaged in it as well as the data related to the main occupation of the people, the share of income which accrues through agriculture and allied activities is barely around 36 per cent. This, therefore, confirms our observation that agriculture is not much of a commercial activity. That it is more a subsistence activity. The other activity having an almost equal share in household income is the service sector whose contribution is around 35 per cent. Of the remaining sources of income the only one with a share in excess of the per cent is generated by non-agricultural labourers.

Wide variations are found between the five villages and the reason for it is the high degree of fluctuation between them with respect to the share of income from agriculture and the service sectors. For example, variations in the share of agricultural incomes is as high as 86.59 per cent in the case

Kamar whereas the percentage is less than 20 per cent in the case of Netala. It is again rather low in the case of Ganeshpur (25 per cent). While Kamar had the highest share of income from agriculture and animal husbandry, the share of service sector in this village was negligible (2.24 per cent). As can be expected, Netala was the village with the highest contribution to the household income by the service sector (50.52 per cent) and was followed by Ganeshpur where this share was around 41 per cent.

Table 4.11 : Village-wise Percentage Share of Income From Different Sources

VILLAGE	SOURCE OF INCOME							Total
	AG and Animal Husbandry	AG Labour	Non-AG Labour	Handicraft	Service	Self-employed	Others	
GANESHPUR	64.55	-	8.62	-	12.05	4.18	10.60	100.00
NETALA	25.17	0.04	14.97	3.27	40.78	7.54	8.23	100.00
KAMAR	41.29	-	18.71	-	26.74	4.07	9.19	100.00
KAMAR	86.59	1.07	2.24	-	2.24	2.89	4.97	100.00
NETALA	18.82	2.14	11.64	0.99	50.52	7.93	7.96	100.00
TOTAL	35.95	0.82	12.28	1.46	35.00	6.39	8.10	100.00

In an effort to see what sort of earnings are being generated in the various occupations at the individual workers level, we also calculated the per worker incomes from the different occupations in the selected villages of our study. These details are given in Table 4.12. The Table clearly brings out the fact that agriculture and allied activities generate the lowest incomes since the per worker incomes are only Rs.2760 for all the villages taken together. We find wide variations among the respective villages. The figure for Kamar is the highest at Rs.5159 where as it is as low as Rs.1954 in the case of Netala. Besides agriculture and animal husbandry the incomes were low even in the case of the agriculture labourers and those engaged in handicrafts.

The highest per worker incomes are being offered in the service sector where this income works out to be Rs.21,243 per worker. Kamar was the village where the earnings in this sector were very low (Rs.5000) and the only village where the agricultural sector had a slightly higher income per worker. In the case of the remaining occupations the per worker incomes were at least Rs.1000 per month. These sectors included non-agricultural workers, self employed and the other sectors.

The variations between earnings in occupations across the five villages were as evident in all occupations as was the case in the agricultural sector. The average per worker income, taking all the occupations together, worked out to be Rs. 5910. Netala and Ganeshpur headed the list with the

highest and second highest per worker incomes respectively. Didsari, on the other hand, was ranked last.

Table 4.12 : Details of Average Income Per Worker In Different Occupations

VILLAGE	SOURCE OF INCOME							Total
	AG/ Animal Husb- andry	AG Lab- our	Non- AG Lab- our	Handi- craft	Service	Self- emp- loyed	Others	
DIDSARI	2755	-	15450	-	43200	15000	19000	3984
GANESHPUR	2354	600	13447	6286	21968	20320	15829	6602
JAMAK	2419	-	28500	-	17457	9300	14000	4914
KAMAR	5159	2400	10000	-	5000	12900	11100	5383
NETALA	1954	6500	14135	12000	21918	8764	16117	6863
TOTAL	2760	4488	15144	7000	21243	12225	15485	5910

The agriculture incomes, being on the lower side, are supplemented by income from animal husbandry in many cases. Every household has at least one milch animal except for the very poor households. People keep both cows and buffaloes. Milk is generally not sold in the market but the surplus milk is mostly converted into ghee and then sold. The other important activity is rearing sheep and goats. In this connection Kamar is the most important village with a fairly good number of sheep and goats. Some people also keep mules which are used in transportation. All these details can be seen in Table 4.13.

Table 4.13 : Distribution of Households by Number of Animals

VILLAGE	Milch cows	Milch buffa- loes	Milch ani- mal per house- hold.	Non- milch cows	Non- milch buffa- loes	Bullo- cks	Young Stock		Sheep and Goats	Mules
							Cows	Buffa- loes		
DIDSARI	18	13	0.84	9	6	34	9	19	17	6
GANESHPUR	34	36	0.78	10	5	50	30	27	40	2
JAMAK	11	15	0.65	9	7	49	14	11	2	3
KAMAR	25	32	1.63	12	10	30	23	5	194	3
NETALA	31	12	0.54	23	8	59	17	9	6	-
TOTAL	119	108	0.81	63	36	222	93	71	259	14

IMPACT OF THE EARTHQUAKE IN THE SAMPLE HOUSEHOLDS

We will begin by analysing the destruction causing by the earthquake in the households which were surveyed by us in the five villages selected for our study in terms of loss of life of humans as well as animals and the extent of injuries which were caused to human beings (Table 4.14).

In the case of Didsari a total of 27 deaths were reported from the 37 households covered in our sample. The maximum number of persons to have died were children (16). The number of persons who received injuries were 65 and this figure was clearly divided between adult males and females and the children. In Ganeshpur the number of dead was very close to the figure of Didsari and once again the casualty list mainly comprised of children. The number of injured was, however, less (50 persons) but with little variation between the sexes and children. The number of casualties both in terms of dead and injured persons was the highest in Jamak village where a total of 41 persons died from among our sample households and in addition to this 104 persons sustained injuries. In contrast to Jamak, Kamar was the village which registered minimum loss of life as well as injuries to its inhabitants. There were only 6 deaths from our sample households and none were children. The number of dead persons were relatively less even in Netala (19) although a large number sustained injuries (63).

Table 4.14 : Details of Destruction Caused by the Earthquake
to Human beings and Animals

VILLAGE	No. of Persons Dead				No. of Persons Injured				No. of Dead Animals					Avg. loss per house- hold(Rs)
	Male	Female	Chil- dren	Total	Male	Female	Chil- dren	Total	Cows/ Buffa- loe	Bullo- cks	Sheep/ Goats	Mules/ Horses	Total	
DIDSARI	3	8	16	27	21	22	22	65	18	28	-	7	53	3743
GANESHPUR	3	6	15	24	17	19	14	50	3	6	-	-	9	324
JAMAK	9	14	18	41	35	34	35	104	26	32	-	6	64	4148
KAMAR	3	3	-	6	7	13	8	28	10	4	34	-	48	1897
NETALA	2	7	10	19	27	23	13	63	11	4	-	2	17	485
TOTAL	20	38	59	117	107	111	92	310	68	74	34	15	191	1556

Looking at the loss of life to animals Ganeshpur and Netala were fortunate since the death of animals reported from these two villages was the lowest. However the remaining villages were less fortunate in this regard. In Didsari and Jamak the loss was mainly in terms of dead bullocks whereas in the case of Kamar the sheep and goats accounted for the highest number of dead animals. The average loss regarding the loss of animals, in monetary terms, was obviously low in the case of Ganeshpur (Rs.324 per household) and Netala (Rs.485 per househld), whereas it was reasonably high in the case of Jamak and Didsari where the figures were Rs.4148 and Rs.3743 respectively.

On the whole, therefore, our sample households recorded a total of 117 dead persons (including 59 children). The loss of lives was lowest among the males since they could manage to run out of the houses when the earthquake struck the area, 310 injured persons and 191 dead animals. Keeping in mind the fact that our sample size was of 282 households, these figures themselves speak for the extensive damage which was caused by the earthquake in these five villages.

The extent of damage which the earthquake caused can be further ascertained in terms of the loss to property. Table 4.15 depicts this loss in terms of damage caused to houses and the agricultural land of the respondents. The houses of the total 282 respondents belonging to the five villages were fully destroyed by the earthquake. We further enquired from the respondents regarding their assessment about the loss to their houses. In all the five villages taken together the average loss, as estimated by the respondents themselves worked out to be around Rs.64 thousand per household. There were however variations between the different villages and this was mainly on account of the type of construction which had existed and had been damaged. As a consequence the estimated loss per household was the least in the case of Kamar (Rs.48 thousand per household) whereas it was highest in the case of Netala (almost Rupees seventy three thousand per household). The figures in the remaining three villages were close to the overall average.

While destruction had been total with respect the houses of the area, the agricultural land to be damaged was found in the case of 156 households only and even among them only 52 reported that the damage caused was very severe. The others escaped with only partial damage to their agricultural land. The village with least damage was Ganeshpur while maximum damage had been caused in Didsari and Kamar. In monetary terms this loss worked out to be Rs.1754 per household in Kamar which was the worst affected of our five villages while it was only Rs.394 in the case of Ganeshpur. The overall average worked out to be Rs.870 (Table 4.15).

Table 4.15 : Damage Caused to Houses and Agricultural Land By Earthquake

VILLAGE	Damaged Houses		Average Loss Per household in(Rs)*	Damaged Agr'l Land		Average Loss per house-hold in (Rs)*
	Badly	Partly		Badly	Partly	
DIDSARI	37	-	63730	13	24	1305
GANESHPUR	90	-	61067	2	23	394
JAMAK	40	-	67850	10	22	486
KAMAR	35	-	48429	15	16	1754
NETALA	80	-	72875	12	19	1009
TOTAL	282	-	64160	52	104	870

* As assessed by the respondents

As a result of the earthquake the income of the people suffered a set back. This was felt most in the case of the cultivators since the earthquake had damaged their agricultural land. In the five villages covered by us there were a total of 156 households from our total sample who reported that their incomes from agriculture were adversely affected. The loss of earnings ranged from around 10 per cent to over 30 per cent. In around 40 per cent of the affected households the loss was in the range of between 20-30 per cent while in around 28 per cent families each the loss was in the ranges of 10-20 per cent and above 30 per cent. This loss was reported in all the five villages to some extent or the other but was most widespread in Didsari where all the respondents indicated loss of earnings. This was followed by Jamak and Kamar.

The second occupation in which incomes were adversely affected was animal husbandry since the earthquake had killed quite a few animals and left various others injured. Ganeshpur was the only village which did not report this problem. In the remaining villages a total of 27 families suffered a loss of income in the animal husbandry sector.

Besides this, there were five families, four from Ganeshpur and one from Netala, where people engaged in handicrafts reported a loss in earnings. All these households are engaged in spinning and weaving of woollen yarn. Their households equipments were badly damaged as

Table 4.16 : Villagewise Loss of Earnings in Per cent Terms

VILLAGE/TYPE OF ACTIVITY	Below-10	10-20	20-30	30+	Not affec- ted	Total No. of res- pon- dents
<u>DIDSARI</u>						
Agriculture	-	7	20	10	-	37
Animal Husbandry	-	1	1	6	29	37
<u>GANESHPUR</u>						
Agriculture	2	16	7	-	65	90
Handicraft	-	-	2	2	86	90
<u>JAMAK</u>						
Agriculture	-	13	9	10	8	40
Animal Husbandry	-	2	1	6	31	40
<u>KAMAR</u>						
Agriculture	-	5	14	12	4	35
Animal Husbandry	-	2	2	-	31	35
<u>NETALA</u>						
Agriculture	2	5	13	11	49	80
Animal Husbandry	-	4	-	2	74	80
Handicraft	-	-	-	1	79	80
<u>TOTAL</u>						
Agriculture	4	46	63	43	126	282
Animal Husbandry	-	9	4	14	255	282
Handicraft	-	-	2	3	277	282

their houses had collapsed completely. Since the government offered no compensation to repurchase their broken equipment, they had to arrange for the finances through their own resources. It, therefore, took sometime before the arrangement could be made and the activity restored.

PROVISION OF RELIEF MEASURES FOLLOWING THE EARTHQUAKE

As soon as the earthquake struck the area the government was the first to move into action in order to provide immediate relief. The earthquake, as has already been indicated, disrupted the normal life of the area. Over and above the destruction which had been caused to the lives and property of the individuals residing in the area, large scale damage was caused to roads, bridges and the means of communication. Many areas therefore got completely cut off from the others as a result of them being rendered totally inaccessible from the others as a result of them being rendered totally inaccessible. The first step was therefore taken by the government with a bid to restore the roads and communication links such that aid could be provided to the needy people of the adversely affected areas. Our army and the other para-military forces have a brilliant record of providing assistance in times of such natural calamities and once again they were in the forefront as far as provision of relief was concerned. The army pressed into service as many as 11 helicopters which carried relief measures and helped in

evacuating the injured persons. They along with the personnel of the ITBP and SSB helped in removing the debris and saving those who had been injured and trapped under the debris caused by demolished houses. They then were engaged in providing food and medical facilities and they also distributed some tents and tarpalins such that immediate temporary structures could be erected where those left homeless could be given shelter. The DGBR was mainly occupied with the all important task of repairing the roads and bridges such that communication could be restored. There were not too many NGO's who were actively working in Uttarkashi when the earthquake struck. The Bhuvaneshwari Mahila Ashram happened to be in Bhatwari block of Uttarkashi on the "Save the Ganga Work" and they were possibly the only NGO active in the area at that time. As a result, a couple of days lapsed before the different voluntary organisations geared up and launched themselves in an all out effort to provide immediate relief to the victims of the earthquake in the region. So it might have taken a few days for them to reach the affected areas, the NGO's arrived on the scene as soon as it was feasible for them and went on to play a very crucial role, along with the government machinery, in first providing immediate assistance to the affected population. The items of immediate relief included things like tarpaulin, tents and tin sheets for setting up temporary shelters, food grains, milk, tea and sugar etc, clothing as well as bedding and medical help.

It is quite evident from Table 4.17 that the role played by the NGO's overshadowed the work which officials from the government did in the same area. A close look at the table will reveal that only in the case of shelter a higher proportion of respondents (53.55 per cent) have reported that this particular assistance was forthcoming from the government. However, even with respect to shelter, the role of NGO's was 73 per cent and it was close to 79 per cent with respect to distribution of clothing. Even with respect to offering medical assistance a total of 64 per cent respondents had received this help from the NGO's. In all these cases there was not even a single instance of the people's response being tilted in favour of the government machinery in any village. This further confirms our earlier remarks that the NGO's have provided a highly commendable service in this area following the earthquake and their coming in made the relief operation that much more simpler for the government.

Along with the task of providing immediate relief the government took upon itself the responsibility of providing compensation to the people of the area such that they could tide over the loss which they had suffered. This compensation was expected to bring them back on their feet. The government, therefore, ordered a survey to be conducted at the village level to ascertain the exact number of dead and injured persons, dead animals and a list of fully and

Table 4.17 : *Help Received After the Earthquake*

VILLAGE	Agencies came first		TYPE OF HELP PROVIDED								Total No. of Res- pon- dent
			Shelter		Food		Clothing		Medical Help		
	Govt.	NGOs	Govt.	NGOs	Govt.	NGOs	Govt.	NGOs	Govt.	NGOs	
DIDSARI	37	-	24	13	10	27	6	31	9	28	37
GANESHPUR	90	-	62	28	26	64	20	70	40	50	90
JAMAK	40	-	28	12	13	27	11	29	15	25	40
KAMAR	35	-	11	24	8	27	6	29	10	25	35
NETALA	80	-	26	54	19	61	17	63	28	52	80
TOTAL	282	-	151	131	76	206	60	222	102	180	282

partially damaged houses. People were identified and a list accordingly prepared such that compensation could be duly handed out to those who had been adversely affected on one ground or the other. The details regarding the compensation provided by the government is shown in Table 4.18.

It had already been clarified earlier that a compensation of Rs.30,000 was paid for each dead person with the condition that in any household total compensation on this head would not exceed Rs.90,000. Two types of compensations were paid for the injured persons - those seriously injured received Rs.5000 each while in the case of

minor injuries the amount was fixed at Rs.2000 each. In order to undertake the reconstruction of fully or partly damaged houses a compensation of Rs.20,000 and Rs.5,000 each was provided for the fully and partly damaged houses respectively.

From among our sample households 65 households had at least one death in the household (Table 4.18) and that the total number of deaths were 117 (Table 4.14). In the villages of Ganeshpur, Jamak and Kamar there was no problem with respect to payment of compensation. However, one household in Didsari and three in Netala were not paid any compensation. The problem in each of these cases is that when the listing of the dead persons was being prepared, these four persons were among the very seriously injured. They expired after the list had been finalised and every effort by their family members to rectify the list proved an exercise in futility despite running around from pillar to post.

There was considerable confusion both with respect to the number of injured persons as well as about the seriousness of the injury. In order to be included in the official list of the injured, person concerned had to be examined and certified by an approved doctor. He certified them and also classified them as serious or minor injuries. In all our sample villages and, even in our observation villages the people claim that at the time of the tragedy the

primary concern of any family member was to ensure that timely and proper medical treatment was provided to the injured persons. They, therefore, did not bother whether or not the doctor was approved by the government. Moreover, at the time people did not even have the farsight to realise that compensation would be paid to the injured persons and to have them listed in accordance with the official procedure. Consequently, the official list is a gross underestimate in view of the villagers. As a result our survey shows that 310 persons sustained injuries from 133 households, but in as many as 78 cases the people received no compensation.

Even with respect to the official and unofficial records of dead animals there is considerable disagreement and here too the unofficial number of dead animals is in excess of the official figures. Our survey brought out that according to the respondents 70 households were affected and the number of small and big animals to have died during the earthquake was 191. However, only 28 of these households received compensation since only these families figured in the official list of families which had suffered loss of animal life.

All our villages were among those where the destruction caused to the houses were total and, therefore, every household was eligible to get compensation for the reconstruction of their damaged houses. Among the

Table 4:18 : Details of Compensation For Dead and Injured Family Members and Animals

VILLAGE	Compensation for Dead Person			Compensation for Injured Person			Compensation for Dead Aimal			Total No.of Res- pon- dents
	No need	Paid	Not paid	No need	Paid	Not paid	No need	Paid	Not paid	
DIDSARI	25	11	1	9	17	11	13	14	10	37
GANESHPUR	75	15	-	61	12	17	85	1	4	90
JAMAK	21	19	-	5	8	27	18	10	12	40
KAMAR	30	5	-	28	6	1	25	1	9	35
NETALA	66	11	3	46	12	22	71	2	7	80
TOTAL	217	61	4	149	55	78	212	28	42	282

rehabilitation measures this was the most important one. It was not simply a case of providing people with resources to cover their loss. The need was also felt to develop housing designs based on a technology that would ensure the construction of earthquake resistant houses such that they would be able to withstand an earthquake should it strike again and avoid the type of loss that had been suffered. As far as compensation was concerned, the government drew up a scheme under which an amount of Rs.20,000 would be paid for each house completely damaged. Out of this half was to be paid in cash while the other half would be paid in terms of

materials such as tin sheets, cement and building iron. Over and above the compensation the people would also be entitled to a loan of Rs.15,000 each for the reconstruction of houses. In the case of SC/ST population, however, even this was to be a subsidy. As far as building technology was concerned, various departments such as the PWD, CBRO, Roorkee, Department of Earthquake Engineering, Roorkee and others developed models which would be earthquake resistant as well as suited to the area as well. Thus they gave stress on the use of locally available materials.

Our survey revealed that one person in Jamak and five in Netala did not receive any compensation from the government for reconstruction of their houses despite the fact that their houses were demolished by the earthquake. These households allege that the village Pradhans of these respective village had their names struck from the official list and so they were deprived of their legitimate claim (Table 4.19). Since these households do not figure in the official list, they even failed to qualify as beneficiaries under the various schemes launched by the NGO's. This was so since the NGO's also selected their beneficiaries in accordance with the official list. Yet another thing that was brought out was that the villagers of Kamar refused to accept cement bags as well as building iron as these items were not being delivered within the village itself. They had to be collected from Maneri and the transport cost was beyond their means. Moreover, these items were being distributed

during the monsoon season and people hardly had sufficient shelter for themselves let alone for storing the cement bags. Thus they accepted only tin sheets.

While the government came forward with its scheme of compensation for reconstruction and repair of damaged houses, the various non-governmental organisations also had some schemes in this connection. In the case of Didsari for instance, the Bhuwaneshwari Mahila Ashram distributed 9 tin sheets and Rs.1000 to each family as housing assistance. They also constructed one house for an aged widow (not covered in our sample) and this was to serve as a model house for others to replicate since it incorporates earthquake resistant technology.

Ganeshpur was adopted by the Tata Relief Project team and they constructed a two room house for every household in Ganeshpur. Under this scheme all our respondents have received one house each.

In Jamak two agencies namely ADRA and VHP were active and both of them undertook the responsibility of constructing 32 houses each. However, they undertook the task of constructing only semi-finished houses. Once these houses were handed over to the beneficiaries, the selected beneficiaries were expected to complete these structures on their own. From our sample 26 households received houses - 16 constructed by ADRA and 10 by the VHP. Besides this, Geeta Press, Gorakhpur also gave each family 8 tin sheets.

Kamar, like Didsari, was a village where no housing activity was taken up by any NGO. However, the activists belonging to Bhuwaneshwari Mahila Ashram gave Rs.1500 each to 40 families as assistance for the construction of sheds for their animals. Of these around 15 families were covered in our sample. Besides this, the Geeta Press also distributed 8 tin sheets to every household.

In the case of Netala, the Ram Krishna Mission took upon itself the task of constructing 62 houses. These houses too were semi-constructed structures similar to those constructed by ADRA and VHP in Jamak. Out of the respondents surveyed by us, 42 received these houses.

Besides undertaking the construction of houses, the voluntary organisations also went around different villages in an effort to educate people in connection with earthquake resistant technology. They set up camps in the villages and displayed literature related to the model houses which had been developed with a view to make them earthquake resistant. They trained the masons, carpenters, village Pradhan and other selected persons. In the five villages selected by us this work was handled mainly by The Action Research Unit (TARU) and they provided such know-how in the villages of Didsari, Jamak and Kamar. In the case of Netala the training was provided by engineers belonging to the PWD. Ganeshpur was the only village of our study where such a training was

not organised. This was so since Tata's had announced its intention of providing one free house to all the households.

In the case of Disari the villagers have, by and large, kept in mind the new construction technique as developed and advocated by TARU. These constructions, therefore, are earthquake resistant. Despite the fact that every household was provided a free house in Ganeshpur by the Tata Relief team, the people were dissatisfied with them on the ground that accommodation in them was not sufficient in comparison to their requirements. So around 50 per cent of the families have constructed residences on their own as well in accordance to their needs. Although no training was given in the village itself, those desirous of constructing houses went around in the adjoining villages to learn about the new technology and have adopted the technology.

In Jamak selected people had received semi-constructed houses. However, only around 20 persons in the entire village have completed the reconstruction of their houses. The rest are either living in the semi-constructed structures handed out by ADRA or VHP or in temporary shelters made close to their old houses. Those who have completed the construction work have not shown the wisdom of adopting the new technology.

The villagers of Kamar attended training imparted by PWD personnel about earthquake resistant houses. No agency had undertaken the work of house construction and so the

individuals had to handle this task on their own. Our survey team assessed that only around 40 per cent of the houses had been constructed and not all these structures have been built to make them capable of putting up to an earthquake should it strike the area in future.

Table 4.19 : Compensation in Cash and kind for Damaged Houses

(Only with respect to our Sample Households)

VILLAGE	No. of respondents	Compensation by Govt.	Fully or Partly Constructed Houses Provided by NGO's	Training Provided Regarding Earthquake Resistant Technology	Material and Financial help by N.G.O's for Housing
DIDSARI	37	37	--	TARU	9 Tin Sheets & Rs. 1000/- per family by BMA
GANESHPUR	90	90	90	-	--
JAMAK	40	39	26	TARU	8 Tin sheets per family by Geeta Press
KAMAR	35	35	--	PWD	Rs.1500/- for 40 families by BMA and 8 Tin sheets per family by Geeta Press
NETALA	80	75	42	TARU	--
TOTAL	282	276	158	--	--

Even the villagers of Netala were not lucky to have had a training camp organised within the village to impart knowledge about earthquake resistant technology. But some went over to Maneri or other places to participate in the camps held there. They have shown the wisdom to make the most of their training and so the reconstructed houses have been built with the objective of keeping them resistant to any future earthquake.

There were other relief measures which were also undertaken for providing long term rehabilitation. In the first case the NGO's and the government took upon itself the task of constructing Community Centres. Their immediate need was for providing shelter to the homeless. but they had a wider objective as well. Since the construction was based on the concept of earthquake resistant technology and that too utilising locally available resources wherever possible, it was hoped that they would prove to be model constructions on which the local villagers will look to when engaged in the reconstruction of their individual houses. Once the houses are completed and people shift in them these community centres would then serve an important role in the community life of the village.

Besides this, various NGO's and also government departments imparted vocational training to the local people such that they could take up these occupations and make a sustained living out of them. Besides this some NGO's and

some selected government departments have set up training centres in different villages where the local people are given vocational training with the intention that they will take up these occupations and make a sustained living out of them. Those completing training successfully are also providing assistance in procuring loans to set up their establishments. In Didsari for instance the Khadhi Gramodhyog Board has set up a small unit where woollen yarn is made. Besides this training is also given in knitting. Around 40-50 persons are engaged in spinning and they are provided wages a fixed rate based on the quantity of yarn made from the wool provided at the Centre. In Netala the Bhuwaneshwari Mahila Ashram has set up a training centre where females are given training in spinning and weaving of woollen yarn and knitting sweaters and production of carpets. The centre takes up females in batches of 20-25 females per batch. Similarly, in our observation village Maneri the Vishwa Hindu Parishad has started a training centre where too ladies are being trained in tailoring and embroidery in batches of 25-30 females per batch.

Having gained information from the respondents in connection with the extent of loss that they suffered on account of the earthquake and of the short and long term rehabilitation measures which were undertaken in their area, we also tried to obtain their views as to whether or not they feel that they have regained at least the same socio-economic status that they had attained at the time just before the

earthquake. Around 60 per cent feel assured of the fact that they have attained the pre-disaster level of economic status as a result of the efforts undertaken at the governmental level as well as those taken up by the NGO's. (Table 4.20). Thus only around 40 per cent feel that they continue to suffer. These persons were asked to offer an explanation for their plight and we received multiple response in this connection. The maximum number feel that they have been seriously constrained by the fact that they have to repay either the housing loan provided by the government or the other loans which they had taken in order to finance either their economic activities or for fulfilling other commitments. The next factor which has put a serious constraint on them is the damage which had been caused to their agricultural land. In many cases they have not been able to repair these lands since no compensation was provided by the government or the NGO's. Another equally important factor is that either the people were provided incomplete houses which they have not been able to complete for lack of finances or that the compensation provided for reconstruction was not in tune with their actual requirements. Thus a number of people continue to live in temporary or semi-constructed shelters. A small proportion attribute the death of their animals as the reason why they have failed to restore themselves even at the pre-disaster socio-economic levels.

Table 4.20 : People's Assessment of their Socio-Economic Status as a Result of the Rehabilitation Measures

VILLAGE	Do you feel you have attained the pre-disaster level of socio-Economic Status			If No, what factors have acted as the constraints in the achievement of the same			
	Yes	No	Total	Houses are/in-complete	Loss of Agricultural Production	Loss due to the death of animals	Problems related to re-payment of loans
DIDSARI	25	12	37	5	6	2	8
GANESHPUR	56	34	90	8	7	-	27
JAMAK	23	17	40	11	14	1	10
KAMAR	3	32	35	6	7	3	32
NETALA	64	16	80	4	3	4	8
TOTAL	171 (60.64)	111 (39.36)	282 (100.00)	34	37	10	85

In the next chapter we will focus attention on the peoples perception regarding the efficacy and adequacy of the relief measures and draw up our own conclusions and suggest some policy measures which may prove useful in drawing up an appropriate policy in future with respect to disaster management.

CHAPTER V

CONCLUSIONS AND POLICY OPTIONS ARISING OUT OF THE STUDY AND PEOPLE'S VIEWS REGARDING RELIEF MEASURES

We have just dealt with the extent of damage that the earthquake caused and the different measures which were initiated by the government and other organisations with a view to bring the people back on their feet after the terrible loss which they were subjected to by the natural calamity. An attempt will now be made to present the perception of the people regarding the efficacy and adequacy of the relief measures which were undertaken. We will then draw conclusions based on their perception, our discussions with the people as well as our observations during the course of our field survey. This will finally help us in putting forward some policy options which we hope will be of some use to the policy maker while dealing with natural disaster management.

A section of our interview schedule had been designed with a view to obtain the views of the people on the

effectiveness of the various relief measures, to find out whether they had been sufficient or not and also to know what ought to have been done in case they were not satisfied with the governmental efforts. In this sequence, we first asked the respondents to state whether in their opinion the government and other agencies were quick in taking timely action following the earthquake. The picture which emerges is depicted in Table 5.1. The response is overwhelmingly in favour of the fact that adequate and timely action was taken in providing immediate relief in these villages with respect to shelter, food, clothing and medical facilities. Over 80 per cent responses are indicative of the fact that action was taken quickly and that the various measures taken were also adequate keeping in view the needs of the people. With respect to provision of food, the response in favour is as high as 92 per cent. The only exception in this connection, from among our sample villages, is Kamar. The respondents have felt that clothing and medical help was not timely and adequate. Even with respect to providing shelter the opinion is almost equally divided. Kamar, as we are aware, is one of the remote villages and is located about 8 kms from the pucca road. Moreover, it is at a relatively higher altitude as well thereby making it more inaccessible in comparison to villages on or close to the roadside and at a lower altitude. Its remoteness can be gauged from the fact that there are no more villages on or close to the road side and at a lower altitude. Its remoteness can be gauged from the fact that

there are no more villages north of Kamar. It is, therefore, quite understandable that the relief teams took a relatively longer time to reach this village partly on account of its inaccessibility and also because damaged roads and landslides etc. had already made transportation that much more difficult. Some voluntary organisations did provide relief, but they did not come to the village itself. They asked the villagers to collect the relief material by coming up to the road head.

Even in the case of Jamak a slightly higher percentage of the respondents feel that adequate and timely action was not taken with respect to provision of immediate shelter to the earthquake victims. Such a feeling has arisen possibly because of the fact that Jamak suffered maximum damage. The highest number of deaths were registered in Jamak and all the houses were completely destroyed. The villagers, therefore, possibly felt that special attention should have been paid to them. On the whole, however, our findings speak well of the timely action taken by the government and other organisations immediately after the earthquake in Uttarkashi.

In order to compensate for the loss which people had suffered on account of the earthquake, the government had framed a scheme of compensation which covered compensation for lives lost, animals that died, injuries sustained by human beings and the damage caused to houses. We accordingly enquired from the people as to their opinion regarding the adequacy of the amounts thus fixed as compensation.

Table 5.1 : People's Views Regarding Adequate and Timely Action Following the Earthquake

VILLAGE	Provi- ding Shelter		Provi- ding Food		Provi- ding Clothes		Providing Medical Help	
	YES	NO	YES	NO	YES	NO	YES	NO
DIDSARI	28	9	34	3	27	10	33	4
GANESHPUR	83	7	87	3	83	7	90	-
JAMAK	17	23	32	8	31	9	23	17
KAMAR	19	16	27	8	16	19	14	21
NETALA	80	-	80	-	80	-	77	3
TOTAL	227	55	260	22	237	45	237	45
	(80.50)	(19.50)	(92.20)	(7.80)	(84.04)	(15.96)	(84.04)	(15.96)

In the case of opinion related to lives lost, there was not even a single respondent to express the view that an amount of Rs.30,000 earmarked as compensation for a dead individual with the ceiling of Rs.90,000 for an individual family, was adequate amount to cover their loss especially when the individual to have expired was a young earning member of the family. There were 65 households in our total sample in which there had been at least one death. These households, in particular, felt very strongly that it was hardly an amount worth talking about. They voiced their feelings by saying that in most other cases of deaths caused

in tragedies or during riots etc, the government of most states normally pay higher amounts of even upto rupees one lakh per person. The same has been true even in their own state in certain instances. There was, however, a small percentage of respondents who offered no opinion in this connection. These were those people who were fortunate and none of their family members had died. (Table 5.2).

A very small percentage of the respondents, representing 4 to 5 per cent of the total sample, felt that the compensation paid for injured persons, dead animals and damaged houses was adequate. Yet another small proportion of respondents, mainly comprising of those who did not need the compensation (or were not paid since their name did not appear in the official list), did not express their opinion regarding the adequacy of these amounts. On the whole, therefore, the majority of respondents (ranging from 75 to 93 per cent, depending on the different aspects of compensation) were of the opinion that the compensation provided to them were far from adequate. However, it must be considered that compensations are not meant to cover the entire cost of the damage caused to individuals in a natural calamity. They are basically provided such that people may be able to tide over the initial problems. It is, in fact, not possible to cover the total loss on account of the financial constraints of the government. Above all, even if the amount of compensation was higher than what was provided, it is still unlikely that the public would have been satisfied with them.

Table 5.2 : People's Opinion Regarding the Adequacy of
Different Types of Compensations Provided
by the Government

VILLAGE	Total Respon- dents	FOR DEAD PERSONS			FOR INJURED PERSONS			FOR DEAD ANIMALS			FOR DAMAGED HOUSES		
		Adeg- uate	Not Adeg- uate	No Opi- nion	Adeg- uate	Not Adeg- uate	No Opi- nion	Adeg- uate	Not Adeg- uate	No Opi- nion	Adeg- uate	Not Adeg- uate	No Opi- nion
DIDSARI	37	-	33	4	2	29	6	2	27	8	-	37	-
GANESHPUR	90	-	88	2	5	75	10	4	76	10	6	84	-
JAMAK	40	-	37	3	1	32	7	2	31	7	1	38	1
KAMAR	35	-	30	5	2	21	12	3	24	8	-	35	-
NETALA	80	-	72	8	5	57	18	1	73	6	4	71	5
TOTAL	282	-	260	22	15	214	53	12	231	39	11	265	6

A high percentage of respondents had expressed their disagreement with respect to the adequacy of the compensation offered by the government. They further added that since these amounts were inadequate they had to tap either their own resources to fulfill their requirements or else they had to resort to borrowing from various sources. In the responses we found that in many cases an individual had to utilise his own resources as well as borrow from others. Around 250 of our total sample households had to either spend their own money or borrow from elsewhere. Money was borrowed from the bank, friends or relatives or from other acquaintances. The bank loans were over and above the Rs.15,000 which had been made available by the government for reconstruction of the houses. This loan was made available at an interest of 7.5 per cent and is repayable over a period of 15 years. The other borrowings have been taken at rates of interest fluctuating between 12-24 per cent depending on the source from which it was available.

The money was utilised for various purposes but the single most important reason was the reconstruction or the repair of the damaged houses. This was closely followed by borrowings which were taken so as to fulfill their consumption requirements. The other reasons which also forced people to take loans was for the reclamation of the damaged agricultural land, to replace their dead animals and some other reasons such as replacement of broken equipment in

the case of spinners and weavers. Till the time of our survey not even a single household had been able to repay their outstanding loans fully.

In the light of this we probed further by asking the people as to what would have been the optimum amount of compensation according to them, for each type of loss already identified by the government. However, in this connection we were able to get a response from only those respondents who were the sufferers on one count or the other, were identified as beneficiaries and received compensation although the amount in their opinion was too small. We were unable to evoke a response in this connection by those who were fortunate in not having sustained a loss. The other category which did not respond were those disgruntled people who had suffered losses but, for some reason or the other, failed to find themselves included among the beneficiaries. Of course, those who felt that compensation was adequate was the third category of respondents from whom no response was expected.

In the case of the dead persons, over one-third of the responses were for a compensation between Rs.50 to 60 thousand per individual whereas over half of them felt that the compensation should have been an amount in excess of Rs.80,000. The rest were in favour of compensation ranging between Rs.60 to 80 thousand (Table 5.3). Over and above this, they also felt that compensation should have been paid for all dead family members and not restricted to three as was

the case. As far as the compensation for the seriously injured persons was concerned, nearly half the affected respondents felt that an amount somewhere between Rs.6 to 10 thousand would have been the desired amount while another 37 per cent placed this figure still higher at over Rs.10,000 per seriously injured person.

The official compensation for a dead animal was Rs.1250 in the case of big animals and Rs.300 for the small ones. In this connection nearly two-thirds of the respondents felt that this amount should have been over Rs.5000 for each big animal. Similarly, the view expressed with respect to totally damaged houses was that compensation should have been between Rs.50 to 80 thousand in 46 per cent cases and around Rs.50 thousand in the case of 37 per cent responses.

Thus we can clearly see that in the opinion of the people the rate of compensation ought to have been amounts nearly two to three times of the actual compensation which was given by the government. But as has already been pointed out, these are highly subjective judgements whereas the government is always under a number of constraints while setting these figures and so there is bound to be disagreement as far as the people are concerned.

Table 5.3 : People's Opinion as to what the Optimum Compensation Should have been. (Response Received Only from Affected Houses)

VILLAGE	FOR DEAD PERSONS			FOR INJURED PERSONS			FOR DEAD ANIMALS			FOR DAMAGED HOUSES		
	50-60	60-80	80+	5-6	6-10	10+	2-2.5	2.5-5	5+	50	50-80	80+
DIDSARI	4	1	6	5	6	6	2	3	7	13	18	6
GANESHPUR	4	3	8	-	3	7	-	1	-	29	43	12
JAMAK	5	2	12	-	3	3	-	3	6	8	15	15
KAMAR	4	1	-	1	3	2	-	-	1	19	13	3
NETALA	5	-	6	2	9	1	-	-	2	30	33	8
TOTAL	22	7	32	8	24	19	2	7	16	99	122	44

In continuation with our objective of obtaining the perception of the people we went on to enquire from them the type and extent of relief and rehabilitation measures which should have been taken up according to their assessment of their needs and priorities or the modification which they felt should have been made in the existing schemes launched by the government. In this connection we received multiple responses since each respondents had various suggestions in mind.

As far as the relief measures are concerned, the people expressed the view that free food for the individuals and fodder for their animals should have been provided in the villages for at least the first six months after October 1991. It may be recalled that by way of interim relief the government had provided each family Rs.3000 worth of things which included 20 kgs. of foodgrains and a cash subsidy of Rs.200 per person per family for a period of three months. Around 45 per cent of our total respondents gave this opinion. (Table 5.4).

The government, in their rehabilitation programme, conceived of no scheme through which employment was offered to the people and this shortcoming was felt by nearly 60 per cent of our total respondents. They all were of the opinion that the government could have devised an appropriate scheme through which employment could have been generated during the time of the crisis. The earthquake had adversely affected the incomes of the people because earning members had expired or sustained serious injuries, their agricultural land had been damaged, animals had died and in the case of the weavers their equipment had been badly damaged. An employment generating scheme would have been helpful in making a respectable living rather than the provision of free food and clothing which inflicted upon them a feeling of utter helplessness and the total dependence on the government or

the voluntary agencies for their day to day requirements in the first couple of months following the earthquake.

Despite the fact that the government offered a compensation of Rs.20,000 and a loan of Rs.15,000 on easy terms for the reconstruction of the damaged houses, the people feel that it would have been more appropriate if they were provided constructed houses instead. The underlying argument behind this reasoning is that the compensation as such was not adequate to cover the cost of reconstruction. However, if the government had undertaken this task in the entire village simultaneously the cost of construction could have been significantly reduced. In any case, whatever be the cost, they would have at least received a fully constructed houses. The other rationale behind this argument is the belief that if the government had undertaken the construction activity, they would have fully adhered to the construction technology that would ensure earthquake resistant houses. People feel that although training camps were organised and enough material was displayed in connection with earthquake resistant technology, the training camps were of relatively short duration and the level of understanding limited particularly where it involved a highly technical aspect. Consequently, people were not up to the task when it came to the reconstruction of their houses despite the fact that they tried to follow the guidance given to them in the course of the training camps. On the other hand a good many villagers have not bothered to pay much heed

to this advice and have stuck to their own style of construction which may prove to have harmful repercussions in case there is a reoccurrence of such calamity in future.

On neglected area where no rehabilitation scheme was drawn up was that related to repair and reclamation of damaged agricultural land. In some villages a team of officials belonging to the Soil Conservation Department did carry out survey work and made some assessment of the degree and extent of damage caused by taking measurements etc. However, nothing concrete resulted as no compensation of any kind was offered to cover this loss. Thus, nearly one-third of the total respondents felt that this rehabilitation measure ought to have attracted the attention of the officials and priority accorded to it especially in the light of the fact that agriculture is the primary occupation of the people in the entire district.

Finally, the other matter which was equally important, but went totally neglected in the views of the people was the work related to the restoration of infrastructure facilities. There are several villages which enjoyed both drinking water and electricity facilities prior to the earthquake. However these amenities have not been restored in many villages even after a gap of three years and this has caused immense inconvenience to the local population. Out of our five selected and 3 observation villages only Jamak and Maneri continue to have drinking water while in the remaining six

villages the facility broke down and has not been restored yet. Likewise, electricity is no longer available at present in Didsari and Kamar from among our sample villages and in another two observation villages despite the fact that all these villages enjoyed this facility at the time the tragedy struck the respective villages. Besides this, the damaged school buildings have yet to be reconstructed. Taking our sample and observation villages only Jamak, Netala and Maneri are somewhat lucky in the sense that the work of

Table 5.4 : Perople's Views Regarding Relief and Rehabilitation Measure

VILLAGE	Free Food & Fodder for at-least 6 months	Employment should have been provided	Const-ructed houses should have been provided	Govt. should have reclai-med da-maged land	Infra-stru-cture faci-lities rest-ored	Total Respo-ndents per villa-ge
DIDSARI	11	26	17	13	6	37
GANESHPUR	35	33	25	16	10	90
JAMAK	18	26	14	19	8	40
KAMAR	25	28	32	27	13	35
NETALA	39	55	30	22	37	80
TOTAL	128 (45.39)	168 (59.57)	118 (41.84)	97 (34.40)	74 (26.24)	282

N.B. : Figures in brackets are percentages to total respondents.

reconstruction of the school building was in progress. In the remaining five the work had not even started. This is causing all sorts of problems as it becomes virtually impossible to hold classes during the monsoon season as well as during the period of extreme cold.

These are, therefore, the areas in which the relief and rehabilitation measures should have had greater focus in accordance to the views of the people.

We asked people to let us have their views regarding the new construction technology and to judge whether they are better than the traditional houses from the point of view of offering greater resistance to earthquakes. Almost three-fourths of the total respondents were in agreement with the view that the new houses were better and safer than the traditional ones. The response in their favour was highest in the case of Ganeshpur (around 83 per cent). However, in the case of Kamar it was as low as 40 per cent. Only around 13 per cent respondents were of the opinion that their traditional houses were better. This percentage was higher in the case of Kamar and Didsari. The rest could not form any firm opinion on the ground that they had no technical knowledge about these things (Table 5.5).

Table 5.5 : People's Views Regarding the New Technology Houses

VILLAGE	THAT NEWLY DESIGNED HOUSES ARE BETTER		
	YES	NO	DO NOT KNOW
DIDSARI	24	8	5
GANESHPUR	75	5	10
JAMAK	29	4	7
KAMAR	14	10	11
NETALA	62	10	8
TOTAL	204 (72.34)	37 (13.12)	41 (14.54)

Finally, we asked the respondents to offer some suitable suggestions, based on their experience of October 1991, through which a minimum level of preparedness can be attained so as to be able to face the eventuality of another earthquake at a future date. The respondents came up with various suggestions leading to a multiple response situation as can be evidenced from Table 5.6.

The maximum stress (around 82 per cent of the respondents) was on the construction of earthquake resistant houses. This is quite understandable since maximum damage was caused in 1991 by the fact that the traditional houses collapsed because of their faulty construction technology. If only the houses were better designed the total loss to

Table 5.6 : Measures to be Adopted to Attain a Level of Preparedness for an Earthquake in Future.

VILLAGE	Total respon- dents	Con- struc- tion Earth- quake Houses	Ban the Tra- diti- onal Houses	Proper trai- ning of New Tech- nology	Soil tes- ting etc. before house const- ruct- ion	Edu- cation and Trai- ning about Earth- quake	Relief camps within the villa- ge
DIDSARI	37	29	19	13	11	17	14
GANESHPUR	90	76	61	28	21	33	39
JAMAK	40	34	25	9	15	16	12
KAMAR	35	25	25	13	18	21	23
NETALA	80	68	38	31	25	24	32
TOTAL	282	232 (82.27)	168 (59.57)	94 (33.33)	90 (31.91)	111 (39.36)	120 (42.55)

NB : *Figures in brackets are percentages to total respondents*

human and animal life as well as property would have been far less. The feeling in this regard was so strong that nearly 60 per cent of the total respondents feel that a ban should be imposed by the authorities on the construction of traditional houses. Another one third of them feel that training of earthquake resistant technology should be provided in depth such that people can grasp it properly and understand its significance fully. In their opinion a short duration camp does not fulfill the desired objective and so a number of people continue to remain ignorant about the

significance of this technology. Yet another 32 per cent respondents also feel that before taking up house construction proper soil testing should be carried out to ensure that the house will be stable and strong.

Besides the suggestions related to new houses, there was the suggestion that people should be educated fully about earthquakes and should be trained in earthquake management. For if they are well trained and educated they themselves will be capable enough of handling immediate relief operations without having to wait for help coming from the government or any other outside agency. Finally, they felt that should an earthquake ever hit the area again in future, the government as well as all the non-governmental organisations must remember to open the relief camps within each village rather than at the nearest road head. If this is not done the same confusion, which was evident during 1991, is bound to repeat itself and a lot of the relief effort will go waste.

Before we conclude and offer some policy recommendations, we would like to have an overview of the post earthquake scenario of Uttarkashi and the selected villages as they emerge from our analysis since it is these findings which provide the very basis of our recommendations.

It is well known that the earthquake which struck Uttarkashi and its adjoining districts on the night of October 20, 1991 with an intensity measuring 6.6 on the

Richter Scale, left behind a trail of devastation and misery. There were numerous landslides, cracks in the ground and slumping of roads and collapsed bridges. Telephone and electric poles snapped all over the area thereby disrupting communications as well as power supply. The damage caused to roads and bridges led to hundred of villages being completely cut off from the rest of the area. In fact, the last time that a servere earthquake had been experienced in this region was way back in September 1803. It will not be very inappropriate to state that people and the authorities were both caught completely off-guard.

The extent of loss is evident from the fact that 718 human and 657 animal lives were lost in addition to over 5000 people who sustained injuries. In the wake of the calamity there was no record whatsoever regarding the number of injured animals. Besides this over 20 thousand houses were completely damaged and another 45 thousand partially damaged. Out of the affected districts, the worst affected was Uttarkashi where alone 653 human beings and 562 animals died and the number of injured persons was around 4700. Almost 15 thousand houses collapsed totally and very nearly 20 thousand were damaged to a lesser extent.

Even within Uttarkashi district, the worst affected area was Bhatwari tehsil with respect to all indicators of loss such as human lives lost (562), houses fully destroyed (8500), dead animals big and small (1152); and the number of

injured persons (3411). Therefore, when we took up the task of village identification for the study Bhatwari was the automatic choice.

Out of a total of 98 revenue villages of the tehsil, 28 were very badly affected and most of them were in Bhatwari block. Thus our final selection of villages narrowed down to this list of 28 villages and the five that were ultimately selected were Didsari, Ganeshpur, Jamak, Kamar and Netala. These five villages taken together accounted for almost one-thirds of the total deaths which took place in the entire district. In order to obtain meaningful results we decided on having a really large sample and accordingly we surveyed a total of 282 households from these five villages and this corresponds to a sample size of around 60 per cent.

In order to provide immediate relief it was essential to have an authentic list of dead persons and animals, injured persons and houses damaged on a villagewise basis. In the first instance the Patwaris were handed the task of preparing this list. However there were a number of irregularities and the higher authorities received a complaint to this effect. Thus the process was repeated by involving officials of a higher rank. Accordingly, a list was prepared and this was the final list which formed the basis of relief operations.

The first couple of weeks were those of utter confusion and chaos. So much had to be done but there was lack of proper management. This was, therefore, the period during

which all sorts of irregularities were witnessed. Relief materials kept pouring in from all parts of the country and from International organisations such as the Red Cross etc. but the relief material was distributed mainly at the district headquarter or in villages that were connected by road. Thus a large number of people living in the relatively remote and less accessible areas were deprived of these facilities while some got more than their requirement. In many cases it was found that voluntary organisations came to the nearest road head and sent message for the people residing in the nearby villages to come and collect their relief materials. But the people often found this inconvenient for one reason or the other.

Once the final list of beneficiaries was prepared the government also drew up appropriate relief and rehabilitation schemes. It also announced its scheme of compensation that would be paid in order to partly cover the losses which the people had suffered. Accordingly, a compensation of Rs.30,000 was announced for each dead person subject to a maximum of Rs.90,000 per family. In the case of the seriously injured, the compensation was fixed at Rs.5000 each while the same was Rs.2000 in case of minor injuries. The animals were classified as big and small and an amount of Rs.1250 and Rs.300 was offered by way of compensation for the big and small animals respectively.

In order to facilitate the repair and reconstruction of the damaged houses a subsidy of Rs.5000 was announced for houses which were partially damaged, but in the case of fully damaged houses the amount was fixed at Rs.20,000. Out of this amount half was to be paid in cash while the balance in terms of materials such as tin sheets, cement bags and construction iron. Besides this, the individuals were also made available a housing loan of Rs.15,000 per beneficiary through HUDCO. However in the case of SC/ST population the entire Rs.35,000/- was subsidy.

The state government placed before the Central Government as well as before the World Bank a memorandum for financial assistance. In the case of the Central Government the demand made was for Rs.123.87 crores while the World Bank was approached for financial support to the tune of Rs.127.92 crores.

In Uttarkashi district various government departments also drew up their estimates regarding the losses suffered by their departments and accordingly placed their demands before the state government. On the whole the government spent Rs.103.54 crores on various relief, rehabilitation and other measures in the district of Uttarkashi.

Alongside the government the NGO's too played a very vital role in Uttarkashi in carrying out relief and rehabilitation measures. In order to carry out long term rehabilitation measures the agency CAPART wanted some NGO's

to offer their services. This was achieved within three months and thus 6 organisations were identified. Of these BMA. was from Tehri Garhwal and SAMTA from Chakrata, Dehra Dun. Out of the remaining four VIKALP and DISHA were from Saharanpur while RUCHI and SUTRA were organisations based in Himachal Pradesh. All these organisations identified the villages they would adopt for the rehabilitation. On the whole about 40 villages were thereby adopted. Besides these six there were other organisations as well who took up rehabilitation work on their own.

The NGO's, under the long term rehabilitation programme, took up the work of training people in the construction of earthquake, resistant houses. They built community Centres which were to serve the purpose of model houses since these Centres were built on earthquake resistant technology. Many organisations undertook the responsibility of constructing houses for the people out of their own resources. The other rehabilitation programmes were those related with minor irrigation projects such as irrigation canals and storage tanks etc. Besides this they also took up employment and income generation programmes by setting up training camps and training Centres where training in areas such as tailoring, embroidery, spinning and weaving, carpet and blanket manufacturing horticulture and rabbit raising scheme were undertaken.

In our selected villages the voluntary organisations have done a highly commendable job. They trained people in the art of making earthquake resistant houses, constructed community Centres and constructed fully as well as semi-finished houses to be distributed free among those who had become homeless after the tragedy. Some training Centres were also set up to train particularly women in spinning and weaving as well as in tailoring and embroidery work.

The assessment of the people, as far as the quality of work undertaken by the NGO's is concerned, is highly in their favour and almost two-thirds of the total respondents hold the view that they do better work than the government departments because they possess the ability to assess the problems of the people by virtue of the fact that they are grass root organisations and work in harmony with the people. Moreover, these organisations are working primarily as they are interested in these activities and so there is a much higher degree of dedication and efficiency in their working. These thoughts were shared by the villagers of our three observation villages as well.

Keeping in mind the efficiency of the voluntary agencies and the degree of faith which people have in them it would be worthwhile handling greater responsibilities to them in future whenever a natural calamity strikes an area. Accordingly a list of NGO's can be prepared on the basis of their specialisation and the region in which they are willing

to work. They can then be called at a short notice whenever the need arises. However, these NGO's should be made properly accountable to an agency like CAPART such that proper supervision and monitoring of their activities can be undertaken to ensure that they work efficiently.

Our analysis of the primary information collected through the field survey in the five selected villages brought out the fact that the main activity of the people was agriculture since nearly 77 per cent of the total workers were engaged in this sector. However, the agriculture is traditional and offers barely a subsistence earning because when we look at the percentage share of agricultural incomes to total household incomes, it is only around 36 per cent. The average income per worker in agriculture is only Rs.2760 whereas the overall average taking all occupations together, it is Rs.5910 per worker.

Since these villages were among the worst affected villages, there was considerable loss of life (both human and animal) and widespread damage to houses. The respondents felt that agricultural incomes and those from animal husbandry went down because agricultural fields were damaged and also because a number of animals died.

The villagers were dissatisfied with the official records pertaining to dead human beings and animals and the injured persons. In Didsari and Netala compensation for the dead was not paid because at the time of listing the people

were among the seriously injured persons. There were large discrepancies with respect to the injured persons and dead animals as well. In the case of injuries a degree of arbitrariness was also adopted in the categorisation of serious and minor injuries. With respect to housing there were not much differences. However, one person in Jamak and five in Netala from our sample failed to qualify as beneficiaries for compensation and for this they put the blame on the gram Pradhan who according to them was the person to have struck their names off the list of beneficiaries. Many agencies also provided the villagers finished or semi-finished houses over and above the compensation handed out to them by the government.

In most cases people were not satisfied with the amounts of compensation which was given by the government. In the case of dead persons, for instance, the optimum amount as indicated by them ranged from Rs.50 thousand to Rs.1 lakh. Besides this they also felt that there should not have been any ceiling as imposed by the government that compensation of only three dead persons per family will be permissible. Similarly they have made their own assessment with respect to the optimum compensation in the case of injured persons, dead animals and damaged houses.

In response to our question as to whether their socio-economic status has been restored at least to the pre-disaster level or not, nearly 60 per cent felt that it had

been restored as a consequence of the rehabilitation measures. Of the 40 per cent who felt otherwise, they cited their reasons for the same. These problems included the burden of loan repayment, loss of income as a result of damage to their agricultural land and because of the loss of animals. Yet another reason was that their houses are not reconstructed in many cases and this has been a great setback in their inability to go back to at least the pre-disaster level of socio-economic status.

SOME LESSONS LEARNT DURING THE 1991 EARTHQUAKE

- (i) The chaos which was caused as a result of the irregularities in preparing the list of the beneficiaries for different types of compensation, have made people critical of the governmental effort. They have developed the feeling that proper identification was not carried out and in the entire process a high degree of arbitrariness was adopted especially in exercising judgement as to whether an injured individual was to be treated as a case of serious or minor injury. Similarly they have also complained that the official list of injured persons and dead animals are gross underestimates and that the actual figures were much higher. This, therefore, means that in the case of any natural calamity in the future we must take utmost precaution

and ensure that the work of listing is entrusted in the hands of senior and responsible officers at the very outset such that people can have a greater degree of faith in their judgement and assessment.

- (ii) Another very relevant issue to be raised was that related to the death of individuals. Our survey clearly brings to light the case of one household in Didsari and three in Netala which did not receive any compensation for the next of kin which died in these households. This happened because while the list of dead persons was being prepared, the people were among those very seriously injured as a result of the house collapse. However, all these persons died after a lapse of sometime once the listing had been completed. The time lapse ranges from a fortnight to two months. Consequently no compensation was received by their family members. In future, therefore, some provision should be made to consider such cases sympathetically once it has been assured that the case in question is a genuine one.

- (iii) It was also observed that identical schemes of rehabilitation were carried out at the level of the government as well as the non-governmental organisations. The most striking example is that of house construction. While the government did not undertake the responsibility of reconstruction of

houses, it made available financial assistance ranging between Rs.20-35 thousand depending on whether the individual in question belonged to the general population or the SC/ST group. The NGO's simultaneously also took up the work of constructing houses for those whose houses had been damaged by the earthquake. In the villages surveyed by us, for instance, we found this activity being taken up by agencies such as Tata Relief Project, ADRA, VHP and Ram Krishna Mission. In most of such cases, the cash and material compensation provided by the government was misutilised by many and was put to unproductive uses. It would have been much better if the amount of compensation as well as that which the Voluntary organisations were spending could be pooled together. In this way people could have received fully completed houses in those villages where the NGO's could construct only semi-finished structures. In cases where fully constructed houses were provided, these could have been bigger and better designed to suit the requirements of the people. We have evidence that people felt that the fully completed houses given by Tatas are small and in many cases the beneficiaries have failed to complete the semi-finished constructions which were handed over to them. The fact that people are still living in the semi-finished houses bears testimony to the fact that

the compensation provided by the government was not well utilised.

(iv) There has been considerable discontent among the residents of relatively remote villages on the issue of relief distribution which was carried out to meet the immediate requirements of the people soon after the earthquake. Despite the fact that enough relief material poured into the area from all over, the irony is that its distribution was not equitable. People of the remote villages complained that they were neglected since they failed to receive as much relief material as was their due in comparison to what was received by people residing in those villages which were more accessible by virtue of being well connected by roads. They therefore feel that despite the relative inaccessibility, the relief operations should have been carried out within their village to ensure a proper share to them from the pool of relief materials.

(v) While drawing up the schemes for long term rehabilitation the authorities did have in mind the importance of income generating schemes. This could be visualised by the fact that the NGO's in particular set up various training Centres for providing vocational training to the local people. Provisions were also made to make available easy loans

to those who had completed their training successfully. In some cases the Centres paid wages even while the people were being trained. All these schemes were formulated by the NGO's after consultation with the government officials. However, this activity should have been taken up on a larger scale and should have covered all villages over a specified time period as it was not possible to begin the scheme simultaneously everywhere. These villages do have the scope for development of some small scale or household industry such as spinning and weaving of woollen yarn, manufacturing blankets and other woollen goods, carpet making, tailoring and embroidery work, rearing of angora rabbits for their wool and some units producing items based on forest based raw materials such as medicinal plants etc. Taking up these schemes on a larger scale would have been very beneficial as it would have increased the income level of the people and enthused a greater degree of confidence in them.

SOME POLICY IMPLICATIONS

As we are aware, all the eight hill districts fall in the seismic zone IV or V and are, therefore, vulnerable to the hazards of earthquake. It is indeed fortunate that the only severe earthquake before the 1991 disaster had occurred way-

back in 1803 A.D. This partly accounted for the fact that nothing had been done in the area of developing a disaster management plan. However, it is in the interest of all to draw up a suitable disaster management plan for all these districts such that the destruction may be minimised in case this area is subjected to another such natural calamity. It was the complete lack of preparedness which resulted in such large scale destruction and the resultant chaos in the smooth management of the relief operations. Some of the areas in which serious thinking is needed for drawing up suitable policies are being indicated below.

(i) The government should seriously consider the installation of scismological stations, strong motion network, preparation of zoning maps and the collection of data to understand earthquake mechanism. There has been some thinking in this direction and the government was seriously considering on the setting up of such stations in the hill districts. However, nothing concrete had been done till the time of our survey. Keeping in mind the gravity of the situation it is desirable that the government should act without any further delay and take appropriate steps in this direction.

(ii) In any disaster situation, the first to provide relief are always the survivors of the affected area. Uttarkashi was no exception in this regard and those

people who either did not sustain any injury, or were lucky to escape with minor ones, were the first to rush to the assistance of the less fortunate ones. There is, therefore, an urgent need for providing public education in order to spread awareness among people about earthquakes, their impact on human settlements and their management. We have the various media which can handle this work very effectively. The people should be made fully familiar with disaster mitigation measures and should be properly educated about the significance of preparedness and planning various categories of persons need to be trained and educated. The first category is that of the administrators since they are the ones who are entrusted the responsibility of organising disaster relief operations and they also draw up suitable plans for rehabilitation and reconstruction. The masses are an equally important category as they are the first to provide relief before the official machinery moves in. Finally, the best possible method of providing earthquake education for future management is through the education of school children. In order to achieve the objective popular stories can be made and booklets distributed and through the screening of video films specially prepared for this purpose.

(iii) The maximum destruction caused by an earthquake is generally the result of houses and other buildings collapsing under the intensity of the earthquake. Uttarkashi again was no exception. The houses had either slate or RCC roofing and the other structure too was not well designed. The houses simply crumbled like a pack of cards. Thus there should be a very strong emphasis on appropriate building technology with special focus on the designing of earthquake resistant houses. In India the principles of earthquake resistant designs and construction have been known for a fairly long period of time but the basic problem has been one of proper implementation of these designs in the actual structures which are constructed in an earthquake prone area. It is most important to impart proper training at the village level to the people particularly the masons and artisans. The experience of 1991 earthquake has been that short duration training camps were organised and these possibly failed to achieve the objective upto the desired extent. Consequently, people in many places have failed to incorporate the new building technology in the reconstruction of their houses. Thus the training should be more intensive and extensive such that people become fully aware of the technology and the distinct advantage which it has over the traditional construction techniques.

- (iv) The appropriate laws and bye-laws regarding construction of earthquake resistant houses should be properly drawn up and effectively implemented as well such that all the new constructions which come up have the capacity to face a possibility of an earthquake and minimise the losses. Besides the laws the PWD or any such organisation should be entrusted the responsibility of ensuring that people are keeping the safety precautions in mind while taking up any construction activity.
- (v) Engineering colleges and other related institutions should be encouraged to develop plans of earthquake resistant houses which are cost effective and those which at the same time give a high priority to the building materials which are easily available in a particular area.
- (vi) Till such a time that the building bye-laws can be drawn up and effectively implemented, people be provided proper training about new construction technology and residential houses accordingly designed, the government should take the initiative and construct a few public buildings such as Community Centres, School and hospital buildings, Panchayat Bhawan and Block office etc. in conformity with the new technology such that they may provide immediate shelter in the eventuality of an earthquake

in future. Some community centres have been constructed in some villages already but these may not be sufficient.

(vii) The experience of Uttarkashi was that there were numerous landslides, cracks in the ground and in some cases the village itself became unsafe for habitation as a result of the fact that land was slipping and the soil became loose. It is, therefore, felt that proper land surveys and testing should be undertaken before people are granted the permission to reconstruct their houses. Among our observation villages Baina was one such village where the ADM Uttarkashi undertook a tour and, after gaining first hand information, issued orders that the people should be rehabilitated elsewhere. However, till June 1994, nothing had been done in this regard.

(viii) Whenever there is a natural calamity the Natural Disaster Management Division of the Agriculture Ministry finances the relief operations in the concerned states. Since 1990-91 the annual budget for the states has been fixed and out of the total amount earmarked for each individual state, the Central government makes available 75 per cent of the total relief while the respective states have to cover the balance amount. It is only natural that there is an urgent need for the proper monitoring of

the relief operations. This model office can think in terms of setting up branch offices in the various state capitals. This will have a twofold effect. First of all, it will help the states in the sense that the office will act as the co-ordinator between the Centre and the State and so the work of obtaining timely relief will be facilitated. On the other hand, a team of experts attached to this office can personally monitor the rehabilitation work at regular intervals.

(ix) Timber is one building material which plays a useful role in the construction of earthquake resistant houses. The Uttarkashi earthquake bore testimony to the fact that wherever the use of timber was substantial, the damage to houses was relatively less. However, keeping in mind the depletion of our forest reserves, the government has imposed restrictions on the cutting of the forest wealth. The government can still think of drawing up of special schemes through which appropriate measures can be taken to ensure greater availability of building timber without causing any undue strain on the ecological balance.

(x) In the light of the fact that non-governmental organisations did a highly commendable work in the area of rehabilitation in Uttarkashi, it is probably the right time to think in terms of according an

increasing role to these voluntary organisations in the relief and rehabilitation measures in future. For this a list of efficient and dedicated NGO's should be drawn up in accordance with their specialisation and their preference for the regions where they would like to operate. In certain specific areas such as earthquake resistant construction technology, people of the concerned organisation may even be provided extensive training as well. All such NGO's should be willing to undertake any relief and rehabilitation at a short notice in the areas of their preference. However, some agency such as CAPART should be the chief co-ordinator. It should be vested sufficient powers and should monitor the working of the NGO's activities strictly. In the rules themselves, the NGO's should be made fully accountable to CAPART in order to ensure that the rehabilitation measures undertaken are completed on a timely basis and that the desired objectives are fulfilled. It is good to learn that CAPART has initiated the opening of certain regional offices by delegating powers to some reputed government or quasi-government organisations in order to co-ordinate the work at the regional level. This has primarily been done to relieve the central office from its ever increasing work load. The same arrangement could also be the first important step in ensuring the effective monitoring of the programmes

at the regional level. Later on such offices could be opened by CAPART at the state level as well to expedite its work.

Finally, we may conclude by saying that the government certainly did a commendable job in providing relief and rehabilitation to the earthquake victims in Uttarkashi. The army, ITBP, SSB and DGBR deserve special mention for their untiring efforts and selfless service rendered in taking up the all important tasks such as clearing the debris and saving the trapped and injured persons, providing immediate temporary shelters to the homeless and in the repairs of roads and bridges as well as the disrupted communications network on a war footing. The NGO's also played an equally commendable role along with the government.

It is always difficult to carry out relief operations on such a large scale after any natural calamity of these dimensions. Uttarkashi too posed quite a unique and daunting challenge in this connection because of its location. Roads, which are the only means of transportation of this area, were badly damaged and scores of villages got cut-off from the rest of the country. Added to this was the fact that some areas are relatively inaccessible even under normal conditions. Relief operations also assumed seemingly unmanageable proportions by virtue of the fact that the government machinery was hardly geared up to face up to such an eventuality quickly since the area did not have any history of recurring earthquakes of such magnitude. Under